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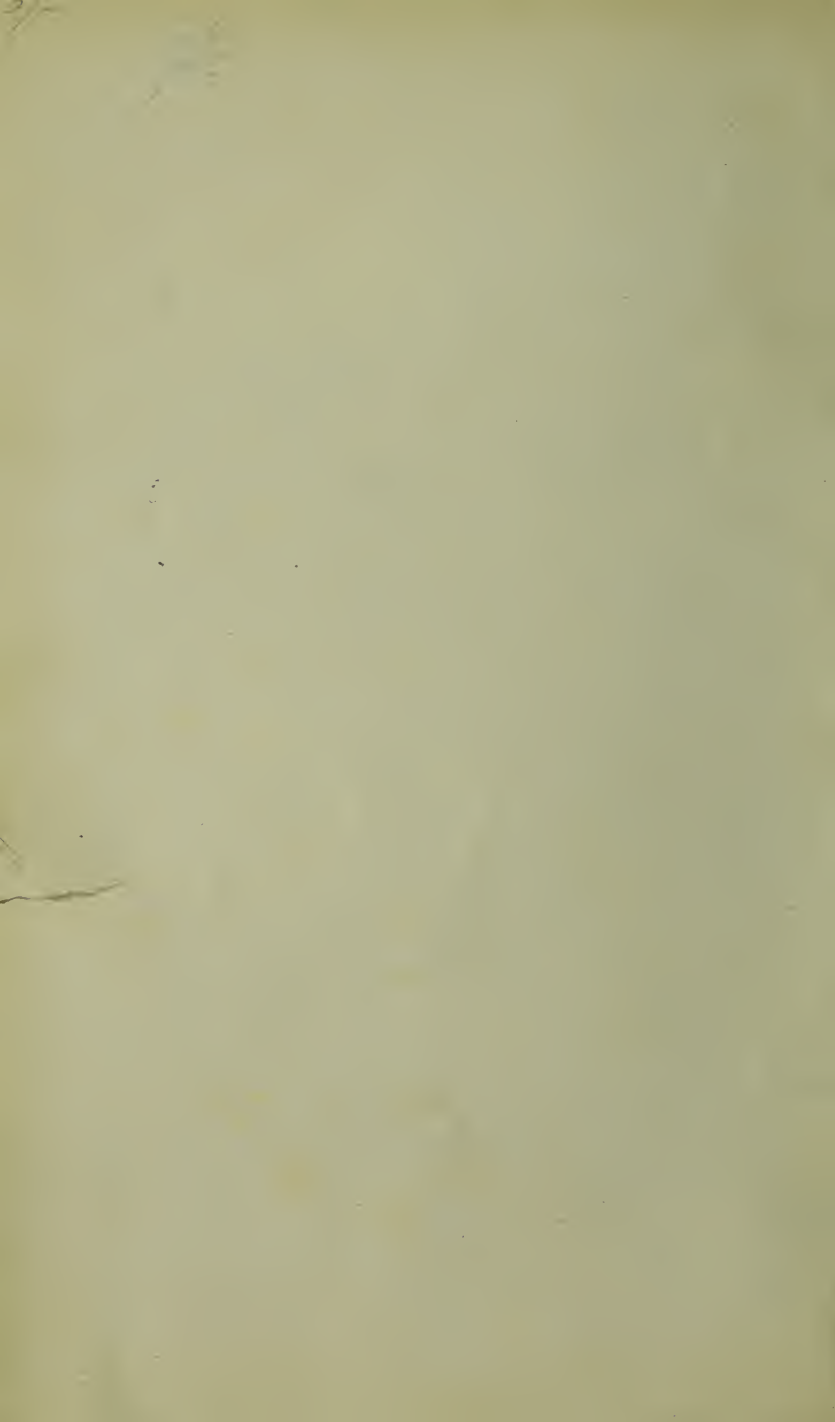
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FRONT VIEW OF HEART, LUNGS, STOMACH, AND DIGESTIVE ORGANS.

1. Right ventricle of the heart ; 2. Right auricle ; 3. Arch of the aorta ; 4. Vena cava superior ; 5. Left innominate vein ; 5'. Right innominate vein ; 6. Left internal jugular vein ; 6'. Right internal jugular vein ; 7. Trachea or windpipe ; 8. Thyroid gland ; 9. Right lung with its three lobes—superior, middle, and inferior ; 10. Left lung with its two—superior and inferior ; 11. The diaphragm ; 12. Left lobe of liver ; 13. Right lobe of liver ; 14. The gall bladder ; 15. The stomach ; 16. Transverse colon ; 17. Coils of intestines ; 18. The urinary bladder ; 19. Right iliacus ; 20. Right subclavian ; 21. Humerus or bone of upper arm ; 22. Femur or thigh bone.

THE
DOCTOR AT HOME
AND
NURSE'S GUIDE-BOOK.

FORMING A
PRACTICAL, RELIABLE, AND COMPREHENSIVE MANUAL, EASILY CONSULTED
AND READILY UNDERSTOOD,
OF
THE STRUCTURE AND COMPOSITION OF THE HUMAN BODY; THE
NATURE, CAUSES, AND TREATMENT OF THE DISEASES TO
WHICH IT IS SUBJECT, ITS MAINTENANCE IN HEALTH
AND STRENGTH; AND THE PROLONGATION OF
LIFE.

WITH SPECIAL DIRECTIONS RESPECTING
THE VARIOUS AILMENTS AND DISORDERS OF CHILDHOOD AND WOMANHOOD.

Ex Libris Mr. Long 6

EDITED BY

GEORGE BLACK, M.B., EDIN., *Heath*

Author of

"First Aid in Accident and Sudden Illness," "The Young Wife's Advice Book," etc.

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PREFATORY REMARKS.

It was once said by a writer of educational works, that if he were beginning life once more, and could set about the formation of a library anew, it should be a library of Dictionaries. His reason for proposing to adopt such a course is by no means difficult to fathom. His work involved considerable research, and when one is in quest of information on any particular subject, and it is desirable to arrive at that information as quickly as possible, what arrangement of matter can be more convenient and suitable than that of a Dictionary, whose contents are systematically strung together in alphabetical order?

In nothing, perhaps, is this mode of arrangement more desirable than in a work which is devoted to an exposition of the healing art, as far as it may be practised in the home and family circle when medical assistance is unavailable, or the aid and advice of the regular medical practitioner cannot be immediately procured. It is a pleasant reflection that the treatment and alleviation of diseases, and the nursing of the sick are far better and more generally understood at this, the close of the nineteenth century, than they were at its meridian; and it is to help to further the knowledge of all that should be done at home, both to prevent and ward off disease, or to effect restoration to health, more or less speedy, in those who are temporarily stricken down by any ailment to which flesh is heir, that "The Doctor at Home and Nurse's Guide-Book" has been produced.

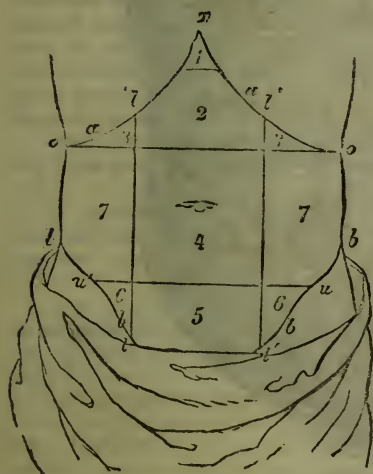
Its pages must and will speak for themselves, and afford their own apology. It is sufficient to refer the reader to them singly and collectively in order to show their purport and utility, and they alone can exhibit the multiplicity of subjects that are dwelt on therein, and the manner in which each is treated. In a brief introduction like this it is impossible to do more than mention broadly and in comprehensive groups the nature of its contents. Among these stand prominent the anatomy and physiology of the human frame, that is to say, the structure, parts, and composition of the human body, and the vital action and functions

of its various organs; such simple surgery as may be practised at home, and such remarks on surgical operations as performed by medical men, as may tend to render the reasons and necessity for them apparent to the dullest comprehension; a consideration of the food we eat and the beverages we drink; the influences of air, water, heat, cold, light, clothing, daily work, exercise, sleep, bathing, and our dwelling-houses and local surroundings in relation to health; the course of daily life and action, and the diet that is best calculated to produce longevity; the action and reaction of body and mind each on the other; diseases of all kinds and of all organs of the body, external and internal; their causes, symptoms, and treatment; the counteraction of the deadly effects of poisons and irritants accidentally or purposely taken into the stomach, or absorbed into the system from the bites of rabid or venomous animals or other causes; and, above all, the proper nursing of the sick, and the care of infants, children, and women, under all circumstances and at all times when attention is most needed and demanded. To say more is well-nigh impossible, because it would require pages; and, moreover, it would be both superfluous and needless. To have said less would have been equally difficult. Enough has been put forth to show the nature of the volume in the reader's hands, and that is sufficient for all practical purposes.

A DICTIONARY OF MEDICINE, SURGERY AND HYGIENE FOR HOUSEHOLD USE.

Abdomen (*Lat.* abdo'men, the belly; from ab'do, I hide or conceal).—The portion of the human body, to which this term is applied, contains the liver, pancreas, spleen, and kidneys, as well as the stomach, small intestines, and the colon. The surface of the abdomen may be mapped out for convenience

of one side to a corresponding point on the opposite side, and the other from the highest part of the crest of the ilium of one side to a corresponding point on the opposite side, and these carried circularly round the body till they meet where each began, the abdomen will be divided into three zones; *o o*, in the diagram, represents the upper, and *u u* the lower of the two lines. If, again, two lines are drawn in a perpendicular direction from the cartilage of the eighth rib on either side to the centre of Poupart's ligament, each zone will undergo a subdivision into three parts, and the abdomen will thus be divided into nine compartments. These two perpendicular lines are marked in the diagram *ll* and *l'l'*. The regions are named as follows:—2, the epigastric, pertaining to upper part of abdomen; 4, the umbilical, belonging to the *umbilicus* or navel; 5, the hypogastric, pertaining to the lower part of the abdomen; 3, the right and left hypochondriac (part of the belly under the short ribs); 7, the right and left lumbar (pertaining to the loins); 6, the right and left inguinal (pertaining to the groin).



ARTIFICIAL REGIONS OF THE ABDOMEN.

into regions. These regions are shown in the above figure, and are determined as follows:—

If two lines be drawn, one from the most prominent part of the lower costal cartilage

Abdominal Viscera (*Lat.* vis'cera, the entrails).—The parts of the body which are included under this general name are those which are contained in the great cavity of the human body called the abdomen. They are clearly shown in their relative positions in the illustration on the next page. In this figure the liver has been turned upwards to allow of the duo-

denum being seen. *a*, the œsophagus, or gullet, passing through the diaphragm; *b c*, the stomach; *d*, the cardiac end where the œsophagus enters; *e*, the left cul-de-sac; *f*, the pyloric extremity of the stomach; *g*, the descending portion of the duodenum; *h*, the

formis, a narrow worm-like portion of intestine attached to the lower and posterior part of the cæcum; *n*, the ileo-cæcal valve, or valve which guards the opening of the small intestine into the large; *g*, the ascending colon; *r, s, t*, the transverse colon; *n*, the



ABDOMINAL VISCERA.

right lobe of the liver; *i*, the left lobe; *k*, the gall bladder; *l*, the common bile duct formed by the junction of the cystic and hepatic ducts; *m, m*, the coils of the small intestine; *o*, the cæcum, or widest part of the large intestine; *s*, the appendix vermi-

formis, a narrow worm-like portion of intestine attached to the lower and posterior part of the cæcum; *n*, the ileo-cæcal valve, or valve which guards the opening of the small intestine into the large; *g*, the ascending colon; *r, s, t*, the transverse colon; *n*, the

Abernethy on Diet.—John Abernethy, a talented but somewhat eccentric

surgeon, who was born in 1764, and died in 1881, was of opinion that disease in man was in a great measure due to excesses in eating and drinking, and inattention to diet.

"I tell you honestly," said the learned surgeon, "what I think is the cause of the complicated maladies of the human race: it is their gourmandising and stuffing, and stimulating their digestive organs to an excess, thereby producing nervous disorders and irritation. The state of their mind is another grand cause; the fidgeting and discontenting themselves about that which cannot be helped; passions of all kinds—malignant passions, and worldly cares—pressing upon the mind, disturb the cerebral action and do a great deal of harm."

As an instance of this, the following anecdote may be related:—

A famous nobleman once called on the great physician and surgeon, from whom these lines are quoted, with reference to an inflamed eye. My lord, after waiting an hour for Abernethy to get through a number of charity patients whom he never left to attend even on the highest nobleman, began the conversation by saying:

"Doctor, I wish you would examine this eye; I fear some deadly mischief is at work here."

"If you will sit there in my patient's chair, and let me do the talking, I will soon find out what is the matter with you."

A few sharp questions, and the doctor concluded the interview with the following words: "Your difficulty is not where you think it is, in your eye, but"—pointing his finger at the patient's enormous stomach—"it is there, in your kitchen. Of course, when the kitchen is out of order, the garret and all the other rooms in the house are likely to be more or less affected. Now all you need to do is to clean the kitchen, and your garret will require no special purification. Your lordship must do as the famous Duke of Wellington did on a well-known occasion—cut off the supplies, and the enemy will leave the citadel."

Ablution (*Lat.* *ablu'tio*, a washing away; from *ab*, from or away, *luo*, I wash).

—A term applied to washing or cleansing, and therefore to purification, by means of water. It is used chiefly in reference to washing or bathing the body, but it is also applied in chemistry and medicine to the washing by which chemical preparations and medicines are separated from extraneous matters.

Ablutions during Pregnancy (*Lat.* *prægnans*, with child; from *præ*, before, and *genero*, I beget).—When the young female has become pregnant, she naturally asks herself the question whether it will be advisable for her to continue her bath as heretofore. This question we shall endeavour to answer for her in our remarks upon this subject. At no time is strict attention to personal cleanliness more necessary than it is now, but certain precautions had better be observed.

Any form of bathing that gives rise to severe shock is apt to prove hurtful, especially during the later months of pregnancy. For this reason it will be necessary to avoid bathing in the sea, although change to the seaside and daily sponging with salt water at home are highly beneficial at this time. For the same reason the shower-bath must not be employed. The best kind of bathing and that which ought to be made use of by every pregnant female, is the daily sponging of the body with water. Especially during winter is this form of ablution to be recommended beyond all others, and the water employed at this season had better be made tepid. The surface of the body should be rapidly dried, sufficient friction being used in the process to cause a glow over the surface. If the female has been accustomed to a cold bath daily, she may continue to sponge the body with cold water every morning during summer and autumn, but tepid should be substituted for cold during the winter months.

While drying the body it is well to protect it from the air, which may be effectually done by enveloping it in a sheet. Warm

baths are too relaxing, and should not be employed at this time.

Abscess (*Lat. abscessus*, a going forth, a removal to a distance, in reference to the gathering of humours, from various parts of the body into one location).—By the term *abscess* is meant a collection of matter, or pus, formed and confined in any part of the body. It is called an *external abscess* when situated in the fleshy parts, or in the cellular substance under the skin, or in the lymphatic glands, or in any other part which is so near the surface that the intervening parts between the original seat of inflammation and the surface of the body become gradually absorbed in the natural progress of the case, and the matter makes its exit externally. It is called an *internal abscess* when situated within any of the great cavities, or in some viscus or internal organ: as the lungs, liver, kidneys, etc.; in which cases the matter only now and then finds its way into the natural cavities which contain the viscus, or now and then, by adhesive inflammation and succeeding ulceration, into other natural passages, as the bowels, the bladder, or the air-vessels of the lungs. A *gumboil*, a *whitlow*, and the large and painful collection of pus frequently formed in the female breast during suckling, are all instances of abscess. There is no structure or organ in the economy which enjoys any immunity from the possible deposit of pus and formation of abscess.

Abscess, Acute Inflammatory.

—The symptoms by which we may know an *acute inflammatory abscess* are these:—A very hot and painful swelling covered by stretched skin of a bright red hue, most intense at the centre. As the swelling increases in size the pain becomes very severe, and has a characteristic throbbing or pulsating character. In the further course of the affection the skin and subjacent soft parts around the inflamed swelling become puffy, and retain for a short time the impression of the finger. As the centre of the abscess becomes more painful and inflamed

it loses its hardness, and gradually *ripens* or breaks down into pus. The skin at this part becomes thinner, more prominent, and loses its bright red colour, presenting the well-known sign of *pointing*, a light yellow or bluish spot. The whole swelling is now soft, and by making gentle pressure alternately with the fingers of each hand, a sensation may be generally felt of a small wave of fluid moved from side to side. The abscess finally bursts, and discharges the contained pus through one or more small apertures formed in the thinnest and most distended portion of the skin. The discharge at first is profuse, and consists of a thick yellowish fluid; as the cavity of the abscess contracts and closes, it becomes clear and thin. The progress of an abscess towards ripening and the discharge of pus is usually accompanied by constitutional symptoms, proportional in severity to the size of the swelling and the amount of inflammation. These symptoms are: shivering, general uneasiness, feverishness, headache, and wandering pains in the back and joints. Acute abscess is generally the result of debility or a depraved state of the blood, and is often met with after fever and during suckling. In persons who have subsisted for some time on bad or insufficient food, any slight injury, as a bruise or cut, may result in inflammation and the formation of pus. Inflammatory diseases of bones and glands in scrofulous subjects are frequent causes of abscess.

Abscess, Chronic or Cold.—

In this variety of abscess the symptoms are much less severe than in the acute inflammatory abscess. The swelling increases in size very slowly, and with little pain or tenderness. The skin remains for a long time free from inflammation or puffiness, until the pus has collected in such quantity as to cause its distension and attenuation. There is then a slight blush of redness, and the matter, or pus, is discharged through a small opening, as in the acute abscess. This variety is known by the name of *chronic* or *cold abscess*.

In the early stage an attempt may be made to prevent the formation of pus by applying cold lotions and leeches, and keeping the affected part at perfect rest. If the patient, however, has had much shivering, and complains of throbbing pain about the swelling, one should at once carry out such measures as may further the *ripening* and pointing of the abscess. Nothing favours the rapid formation of healthy pus so much as nourishing and easily digestible food, as soups, beef tea, eggs, etc. Stout and small quantities of wine, or some spirit, may be given without hesitation. The severe and throbbing pain of the abscess will be relieved by the frequently repeated application of hot poultices made of linseed meal, bread, or bran. Fresh pure air is essential for speedy recovery. When the abscess points, an incision may be made with a lancet, for the purpose of letting out pus. The fluid should be made to flow away spontaneously, as forcing it out by pressure not only causes much pain, but increases the inflammation. After the abscess has been opened or has burst spontaneously, the application of the poultices should still be continued for some days. When the discharge has become thin and scanty, the poultice may be replaced by water-dressing; that is, by pieces of lint dipped in cold water and covered by some impermeable material, as oil-skin or gutta-percha tissue.

Accessory Foods (*Lat. acces'sus*, a coming to; from *ad*, to or towards, *ce'do*, I move).—Under this title may be grouped tea, coffee, cocoa, and alcoholic stimulants, and all such articles of diet which, whilst they furnish some small amount of nourishment, are chiefly valuable for economizing the wear and tear of the body, or for exciting it to a temporary excess of activity, in order to meet some unusual emergency. Narcotics may also, in a secondary degree, be regarded as coming under this head, although they have no claim to rank as articles of diet, since they contribute nothing physically to the well-being of the body. The relation of alcoholic

beverages to health will be dealt with under the head of "STIMULANTS." It may be remarked here that the stimulants and narcotics which are in habitual use among men may nearly all be embraced under three grand divisions:

(1) Those which contain alcohol—fermented and distilled liquors.

(2) Plants and vegetables that are used in substance, or infusion or decoction, by chewing, smoking, snuffing, or by injection.

(3) Volatile preparations that are used by inhalation or by internal or external administration.

Under the first division are included all liquors, fermented or distilled, that contain alcohol in any quantity. Under the second division are included tea, coffee, cocoa, chocolate, opium, tobacco, etc. Under the third division are included ether, chloroform, etc.

Accident, Injury from (*Lat. ac'cidents*, happening to; from *ad*, to or towards, *ca'do*, I fall).—A very considerable number of injuries from accidents are caused every year by machinery used in manufactures. In this country, in 1875, 2·6 persons in every 1000 factory hands were injured in this way. In the United States there were 420 reported deaths caused by machinery in 1870, and the number of injuries was of course very much greater. The Factory Act does perhaps as much as can be done by law for the safety of the working classes. Under this Act inspectors are appointed, who must not be interested in or connected with factories in any other way, and who are invested with the necessary power for carrying the Act into effect. Among the provisions of the Act are the following:—

"Certain portions of a mill, as hoists, fly-wheels, wheel-races, mill-gearing, vats, etc., are required to be fenced, and whenever the machinery, by reason of its character or situation, is, in the opinion of the inspector, likely to cause accidents to the work-people, he is to serve on the occupier a notice requiring him to fence the part of

the machinery which he deems to be dangerous. The occupier may, by serving a requisition on the inspector within seven days of the receipt of the notice, refer the matter to arbitration.

"A child (under fourteen) is not allowed to clean any part of the machinery of a factory while in motion. A young person (from fourteen to eighteen) or woman (over eighteen) is not allowed to clean such part of the machinery as is mill-gearing, while the same is in motion. A child, young person, or woman is not allowed to walk between the fixed and traversing part of any self-acting machine while the same is in motion.

"Accidents causing death, or disabling the person more than forty-eight hours, must be reported to the inspector and visiting surgeon by the occupier of the factory or workshop. The surgeon is to examine at once the nature and the cause of the accident, and report to the inspector within twenty-four hours.

"Neglect to keep a factory or workshop in conformity with the Act is punishable by a fine not exceeding £10; and the court (of summary jurisdiction) may inflict a fine, not exceeding £100, for the benefit of the injured person or his family, or otherwise, in case of death or injury in consequence of neglect to fence machinery as required."

Railway accidents may be properly mentioned in this place, for they affect the *employés* in vastly greater proportions than the passengers. For instance, in France, from 1854 to 1869 the number of travellers killed and wounded on railways was 2,832, but that of *employés* was 11,908. If we consider how few men are required to run a train carrying hundreds of passengers, we cannot help being struck with the great disproportion.

Accident, Removal of Persons Injured by.—See REMOVAL OF PERSONS INJURED BY ACCIDENT.

Accommodation, Weakness of,
(*Lat. accommoda'tio*, an adjusting of one

thing to another; from *ad*, to, *con*, together, *mo'dus*, measure).—Weakness of the accommodation, or focusing power of the eye, giving rise to symptoms much the same as those of old-sight, but from a different cause, may occur in young persons with perfectly-formed eyes. The act of accommodating the focus of the eye to near objects is accomplished by a muscle which is subject to local and general influences, like any other muscle of the body. In old-sight, this muscle is not necessarily weakened, but the lens becomes too dense to be impressed by it; in the cases now referred to the muscle is at fault. After long illness, the muscle of accommodation shares the debility of the whole system, and the eyes are not fit for continuous close work, any more than the legs are equal to a long walk. The use of the eyes should be moderate at first and gradually increased.

Achilles Tendon. See TENDON ACHILLES.

Acidity of the Stomach (*Lat. a'cidus*, sharp to the taste; from *acus*, a needle).—This is a frequent symptom of indigestion, and arises from the food taken being converted by decomposition into an organic acid. The treatment consists in avoiding those articles of food which produce acidity, as sugar, butter, and starch, and taking medicines which will correct it. One of the best of these is bicarbonate of potash, which may be taken with some tonic, as tincture of orange peel, in doses of ten to fifteen grains, three or four times a day. Acidity always arises either from having eaten too much food, or of a quality which the stomach could not dissolve. The remedy is to eat less and less at each meal, until there is no acidity; then those who suffer from this ailment will know for themselves how much the stomach can manage. To eat the same amount, and as regularly take something to correct the acidity, is certain to cause dyspepsia or some other more serious form of disease.

Acids.—"There are several acids,"

says Professor Church, "in most vegetable products. They exist partly in the form of salts, and partly in a free state. The most common and most important vegetable acids are these four: citric acid, tartaric acid, malic acid, and oxalic acid. To these must be added a fifth acid, the acetic, which, however, is mainly produced artificially by the change or oxidation of alcohol, or even of sugar, but which occurs also to a small extent in some fruits, especially when they are over-ripe or decaying. All the acids probably act in the processes of digestion and nutrition in much the same way. They exert a solvent action upon many of the nutrients, but their own nutritive power is very small, for they cannot be consumed in sufficient quantity to give out any appreciable amount of heat or force. More than this, they are already highly oxidized products, and require but a small further addition of oxygen to be converted into the final products of oxidation—carbonic acid and water: this is especially the case with oxalic acid."

Acids of Preserved Fruits.—

The acids of preserved fruits generally are liable to act upon the lead of the solder joining the tin cans in which they are put up, and thus give rise to lead colic in people who partake of such delicacies.

Acne (an adaptation of the Greek *ak'me*, a pimple).—A term frequently applied to an affection of the skin sometimes spoken of as pimples or flesh-worms.

It is next to eczema in frequency, if indeed it is not more frequent, and is often the cause of much unhappiness to young people. Few persons pass through the period between fifteen and twenty years without having some development of the pimples of acne, although in comparatively few are they sufficiently numerous or lasting to warrant medical interference.

The seat of acne is in the sebaceous or oil glands of the skin, and the eruption shows itself as papules or pustules (commonly called pimples) of various sizes, scattered

more or less abundantly over the face, neck, back, and chest. Each individual spot generally takes from a few days, say four, to a week or ten days to run its course (although in the indurated form they may last weeks), and the disease is kept up by fresh crops appearing from time to time.

Generally, however, these inflamed papules or pustules are not the only signs of disorder of the sebaceous glands, but we have associated with them numerous little black specks in the skin; these are popularly called flesh-worms, or grubs, because of the resemblance which the little masses pressed from them have to a worm, and because of the popular idea that they are indeed *flesh worms*. The distended gland is well shown in the accompanying illustration (3).



SEBACEOUS GLAND, DISTENDED WITH SECRETION. (Greatly magnified.)

1. Minute hair in its follicle; 2, 3. Lobes of the gland distended.

The foundation for the popular idea that these plugs which can be squeezed out are themselves worms or insects, lies in the fact that there is in reality a very minute animal which inhabits these glands, although by no means of such a size as one might imagine. It is exhibited in the illustration on the following page; it is called the *demodex* or *steatozoon folliculorum*; its length is from 1-150th to 1-75th of an inch, and its breadth about 1-585th of an inch. But this little animalcule is perfectly harmless, and entirely innocent of the disease, as it is not

supposed that it has the slightest effect in producing any disorder of the sebaceous glands. There may be several found in a single plug, or again, many plugs may be examined without finding any of them; their existence is mentioned only to clear up the popular ideas on the subject.

Acne is one of the few diseases of the skin peculiar to a particular time of life. It may be said never to occur in young children; is rarely, if ever, seen before twelve or fifteen years of age, and is rare after thirty; although the rosaceous form may



DEMODEX FOLLICULORUM. (Very greatly magnified.)

occur much later, even up to fifty years of age.

While acne is a disease of the sebaceous glands, it is not regarded solely as such, for it has relations with the rest of the system which it is important to bear in mind. Indiscretions in diet can bring on fresh spots at almost any time; the articles which do this most frequently and most certainly are rich fried foods. Pastry of all kinds should be largely avoided by those subject to acne, as also nuts, raisins, and cheese, hot bread, cake, preserves, etc. It is not the fat in these things which is bad, for oils are fre-

quently given internally in acne. Butter, also, which is popularly supposed to be so harmful, is not so unless it is burned or melted into other substances.

One of the most frequent causes of acne in those of older years is the use of fermented liquors, ales, beer, and wine, and it is often quite impossible to remove the eruption while these are persisted in; and their use again may cause a relapse.

But acne has also relations with internal states which often require very careful medical investigation; for in by far the larger number of cases in those who have the eruption after the age of twenty, derangements of the urine will be found, as shown by chemical and microscopic examination, which indicate disorders of digestion, imperfect liver action, etc. Again, constipation is a very frequent accompaniment of acne and a cause of its obstinacy, and frequently requires medical care, although home measures may benefit this, and with it the eruption to a certain extent. It is not sufficient to use occasional purgatives, nor to keep the bowels acting with the mineral waters or injections, although these are of more or less service, and may serve to keep the eruption in check.

In regard to the actual treatment of acne, the measures suited to different cases vary so greatly that no brief directions can be given. It is hardly necessary to say that there is no one remedy which will cure the disease; for, as previously remarked, there is no such thing as an actual disease to be "driven out of the blood," as so many non-medical people imagine. Disease is wrong action, and to remove it, we must set the action right. Arsenic will not cure acne, although it may come in as an aid when other causes are removed.

In some cases of acne, the eruption has been excited by a particular indiscretion, either in eating or from a check of perspiration, or some cause which has deranged the system. In these cases, therefore, what remains is really a local disease, and the eruption may be removed by local treatment only—washes, ointments, etc. A simple

wash, of quite considerable service in acne, and quite harmless, may be made with a drachm of precipitated sulphur, a drachm of tincture of camphor, a drachm of glycerine, and four ounces of rose water. Most of the lotions advertised for these eruptions contain sulphur, corrosive sublimate, lead or bismuth. Some are harmless and comparatively inert, but many are positively injurious, and we have seen a number of instances where acne was caused by the so-called cosmetics.

It is a common habit with many to squeeze out the little plugs which blacken the face. There is no objection to so doing provided the skin is not bruised in the process, and provided it is successfully done. If one is squeezed and the little plug does not come out, it will inflame, and harm will be done.

Acne, A Common Cause of.—

On the face, back, and chest, where acne is developing, and where the sebaceous glands are apt to become plugged up with the black specks so often seen, the muscles of the skin known as involuntary muscles (*see* MUSCLES OF THE SKIN) are almost entirely absent, and the secretion, having no particular expulsive force, readily becomes impacted, and if at all hard, fails entirely of finding exit.

Another reason for the presence of acne on the face is the anatomical fact that over most of the surface of the body the sebaceous glands are connected with hairs of some size, and their ducts open into the follicles of these latter, and these hairs, by their continual growth, keep the orifices of the glands free; whereas on the smooth part of the face (nose, forehead, cheeks), also on the neck and chest, the hairs are insignificant, and cannot thus assist in the outflow of the sebaceous secretions, and often even act as impediments by themselves blocking the openings.

Acne, Diet in.—Acne often gives very much trouble in regard to its proper dietary. The diet must be plain. It is better for patients to omit soup at dinner,

because it always congests the face, and so increases the trouble. They should also avoid desserts entirely, because they are so often indigestible compounds of sweets and starch, both of which elements make acne worse; and moreover, the dessert is often just so much more than should be taken after the real appetite is satisfied.

Action of Muscles of Skin on Hair.—*See* MUSCLES OF SKIN, ACTION OF, ON HAIR.

Action of Sudoriferous Glands.—*See* SUDORIFEROUS GLANDS, ACTION OF.

Action of Water in Food.—*See* WATER, ACTION OF, IN FOOD.

Activity, Mental and Muscular.—*See* MENTAL AND MUSCULAR ACTIVITY.

Action on Bread-Making.—*See* BREAD-MAKING, ACTION ON.

Acts, Sanitary, Provisions of.—*See* SANITARY ACTS, PROVISIONS OF.

Acute Bronchitis in Children.—*See* BRONCHITIS, ACUTE, IN CHILDREN.

Acute Laryngitis.—*See* LARYNGITIS, ACUTE.

Acute Sore Throat.—*See* SORE THROAT, ACUTE.

Adipose Matter (*Lat.* *ad'eps*, fat).—The interstices between the muscles, especially in young persons, are generally filled with a substance called *adipose matter*, or fat, which gives to the different parts of the body a round and plump appearance.

Administering of Medicine to Children.—*See* MEDICINE, ADMINISTERING OF, TO CHILDREN.

Admission of Light.—*See* LIGHT, ADMISSION OF.

Adulteration of Bread (*Lat.* *adul'tero*, I corrupt or make impure).—Bread is sometimes adulterated with a view

to whiten the loaf, to enable damaged or inferior flour to be used, or to cause the bread to retain more water than usual. Alum and sulphate of copper (blue vitriol) are employed for the former purpose, and boiled rice and potatoes for the latter. The two chemical substances, alum and sulphate of copper, are dangerous adulterants when added to an article of daily consumption like bread.

Adulteration of Flour.—Flour is sometimes largely adulterated with finely ground rice, potatoes, peas, beans, barley, and oats, but these impurities, which can readily be detected by microscopical examination, only diminish its nutritive value; a more serious adulteration is that with alum, which serves to whiten the bread made from it, and so enables dishonest bakers to sell the product of poor or damaged flour at a high price. On the Continent, sulphate of copper (blue vitriol) is sometimes employed by bakers for the same purpose. The presence of alum in bread, flour or baking-powder may be readily detected by the deep purple colour produced on soaking it in a weak solution of extract of logwood, which may be purchased for a few pence at any chemist's shop. In former times whole provinces in Europe were ravaged by epidemics of what is called ergotism, a peculiar disease, in which the fingers and toes drop off, caused by living upon rye flour, containing the ergot or smut of rye; but at present this mode of poisoning is rarely met with. Occasionally, painters, plumbers, and other workers in lead suffer from lead-poisoning, and paper-hangers, etc., from arsenical poisoning, in consequence of their eating bread and other articles of food with fingers which have not been properly cleansed from metallic particles adhering to them. The Mosaic injunction against "eating with unwashed hands" would, if universally carried out, obviate this danger; and, indeed, many of the edicts of the ancient Hebrew law-giver have a scientific sanitary basis, which, considering the state of human civilization

at the epoch when they were issued, nearly four thousand years ago, seems to point unmistakably to their origin in a wisdom from on high.

Wheaten flour is converted into various kinds of pudding, which, if neither heavy nor accompanied by much greasy matter, may constitute an important part of the principal meal or dinner. Batter, and pie-crust are, at best, questionable as food, and are frequently injurious.

Adulteration of Food.—When we consider that a healthy man of usual size takes into his stomach every year, on an average, about four hundred pounds of meat, five hundred pounds of bread, three hundred pounds of potatoes and vegetables, ninety pounds of butter and fats, and one hundred and fifty gallons of tea, coffee, water, or other fluid, we can soon realize how dangerous the existence of impurities or adulterations of even a few grains in the pound must be to all of us, and how absolutely necessary to the attainment of long life and the enjoyment of health is due recognition and avoidance of articles of diet which contain such noxious ingredients.

Be it observed too that, whether food be thus contaminated through fraudulent design or through ignorant carelessness, it makes no atom of difference in its effect upon the person who eats it, since, in accordance with the inexorable laws of dietetics, Nature here pays no regard to the intention of an action, and punishes *errors of diet*, committed through benevolent ignorance (perhaps even with the penalty of death), as if they were the result of the most malicious crime.

Many of the ingenious falsifications of foods and drinks can only be detected with certainty, of course, by a complete microscopical and chemical analysis, which in this country has of late been provided, as it should be everywhere, by the appointment of skilful chemists and microscopists under Government authority, whose duty it is to examine suspected articles offered for sale in the markets and shops. A few of the

adulterations can, however, be easily recognised, while others can be detected by simple and inexpensive apparatus, without any great technical knowledge, and these are mentioned under the heads of the various foods enumerated in this volume.

Adulteration of Milk.—The removal of cream and the addition of water are the “only ways in which milk is impoverished. The removal of cream exhibits itself in the thinner and less opaque appearance of the milk; and the same effect is produced by the addition of water. Milk-fat, the chief part of the cream, being lighter than water, its partial removal from the milk makes the specific gravity of the remaining milk *greater*; by the subsequent addition of water the specific gravity may be *lowered* down to that of the original milk. It will thus be seen that the specific gravity of milk, taken alone, is of no value as a test of its quality. The indication of the ‘gravity lactometer’ should be combined with the use of a set of graduated tubes, in which to ascertain the number of measures of cream which rise from 100 measures of milk in twenty-four hours. And it is also to be recommended, to ascertain the opacity of the sample by means of the lactoscope. Chemical analysis, of course, affords a more complete proof of the sophistication of milk.”

Since the “Adulteration of Food Act” has come into operation, a great many persons have been fined for mixing water with milk, and care should be taken by those who sell milk in large quantities to have their cans properly sealed, so that they cannot be tampered with on the journey towards their destination, whether it be by cart or railway.

The pump—the cow with the iron tail—has often been described as the most profitable animal of the whole herd; but its days are now over for those who are dishonestly inclined.

It has been urged that the removal of cream, and the addition of water to milk, are not adulteration's hurtful to health.

These operations, however, lower the feeding value of the milk considerably, and also seriously alter the relation between the heat-givers and flesh-formers of this model food. It must also be remembered that there are many children whose daily allowance of milk, even supposing it to be of good quality, is barely sufficient to sustain life; when this milk has been lowered by one-fourth or one-third of its original feeding value, it is not difficult to foretell the result.

This sophistication of milk can sometimes be detected by the lactometer or milk hydrometer, an instrument for determining the specific gravity of the milk, which is, of course, reduced if water only is added; but artful dairymen frequently bring up the specific gravity to the proper standard by dissolving salt or sugar in the diluted milk, so that this test cannot be implicitly relied upon.

Adulteration of Wines.—Wine is found to be adulterated in a variety of ways; but all the purposes it is intended to serve may be comprised under the three heads of—

1. Giving them strength;
2. Lessening or removing their acidity; and,
3. Perfecting or changing their colour.

The natural wines of any country are generally beneficial to the inhabitants of that country; but the strong distilled liquors can hardly be regarded as a natural product, and in large, and very frequently in small quantities, are injurious in all climates.

Adults, Diet of (*Lat. adul'tus*, grown to, or arrived at, maturity).—It is difficult to lay down any strict rule as to the amount of food to be taken in twenty-four hours for grown-up people: men require more animal food than women, and those engaged in active exercise require much more than those who live a sedentary life. Navvies and labourers can get through much more work in a day when well fed than when living on a moderate diet. The

different kinds of food should be well apportioned; it is equally bad to live on a purely farinaceous diet, as it would be to take only fat or meat; what is required for a state of health, is to take a fair proportion of each. It is important also that meals should be taken with regularity, and it is a very bad plan to allow intervals of varying length between meals.

It has been estimated that the food required every twenty-four hours by a man in full health, and taking free exercise, is, of meat 16 ounces, bread 19 ounces, fat $3\frac{1}{2}$ ounces, and of water 52 fluid ounces; that is, about $2\frac{1}{2}$ pounds of solid food and about 3 pints of fluid. The fluid here includes any liquor taken; a man can drink from three-quarters of a pint to a pint of tea, coffee, or cocoa at breakfast, and a woman takes about one-third less; in addition, there is the liquid portion of the solid food, which must count for something.

The amount of solid food has been stated to be about $2\frac{1}{2}$ pounds, but this is often exceeded; the French take much less animal food than we do in England; 16 ounces of meat a day is a large proportion, and can only be afforded by the wealthier classes, who take animal food at breakfast, lunch, and dinner. The poorer classes manage to subsist on a very small proportion of meat; frequently they only have this kind of food once a week; and as they live chiefly on bread, broth, tea, and now and then bacon, their physical stamina is not very high. For any one who is at all engaged in hard work, whether mental or physical, 3 ounces or 4 ounces of meat a day seem to be essential.

Of the different kinds of meat, mutton and roast beef are the most digestible; salt beef, bacon, pork, and veal would rank next in order; some sorts of fish are digestible, as soles and eels, but there is not so much nutriment in them as in a corresponding quantity of meat. Bread is taken at most meals, and it forms an important element of diet; not only is it cheap, but it contains four out of the five kinds of food; life can be sustained for a long time on bread and water.

Pastry is heavy, greasy, and indigestible. Fruits or preserves, made into puddings or tarts, are very excellent articles of diet, and so are light puddings made of rice, arrowroot, tapioca, etc. Salt should be taken with food, and generally it is present, in a greater or less degree, in most kinds of food. Sugar seems necessary in early life, but the desire for it is lessened as we grow older.

Both the saccharine and fatty foods should be avoided by those who are too corpulent, as they both help to build up fatty tissues. The system of Banting rested on this principle, and there is no manner of doubt that fat people can become greatly reduced in weight, and keep themselves down, by attending to this rule; the change should not be made too suddenly, but no danger need be feared on that score. The following substances should be avoided by a fat man, or at least taken only in moderation:—Fat of meat, bacon, pork, etc.; white bread, potatoes, starchy food, as tapioca, rice, arrowroot, sugar, beer, and heavy wines or spirits. The following articles may be taken without fear of forming too much fat:—Brown bread, toast, biscuits, rusks, lean of any kind of meat, fish, fowl, or game, green vegetables, as cauliflower, asparagus, and lettuce, celery, fruit, cooked or fresh, jams in moderation, and light wines. For people who are thin a converse plan may be in part adopted. Climate makes a great difference in the appetite, as has been shown by the large amount eaten by sailors who have served in Arctic expeditions.

Adults, Exercise for.—When systematic gymnastics do not form part of the exercises indulged in, attention should be paid to the varieties of muscular exertion, in order that, even during adult age, all the different parts of the body should receive a share of the benefit. In leaping, walking, and running the muscles of the legs and back are chiefly brought into play, and those of the arms and shoulders have but little occupation; whilst in rowing,

boxing, and fencing much of the work is performed by the muscles of the upper half of the body. In swimming, riding, and driving, the continual effort is more equally distributed among all the chief muscles of the frame.

Advantages of Cooking.—See COOKING, ADVANTAGES OF.

Advantages of Homœopathy (*Gr.* *omoî'os*, like or similar; *path'os*, suffering).—Broadly stated, allopathists for the most part give copious doses of nauseous drugs, which disgust the adult patient and terrify children, and by severity of action often tend to reduce bodily strength. Homœopaths, on the contrary, give medicines which, although they are sufficiently powerful to produce the effect that is desired, are in no way calculated to induce weakness or interfere with any susceptibility peculiar to the patient, and have the merit of being perfectly tasteless. Surely these are good points sufficient to induce every parent who has viewed with pain and sorrow the prolonged reluctance of children to swallow ordinary medicine, and every one who has any respect for his own palate and sense of taste, to give the system a fair trial.

Advice to Bathers (*Fr.* *ad'vis*, or *a'vis*; from *Lat.* *ad*, to, *visus*, seen).—The following important advice to bathers has been issued by the Royal Humane Society:—

“Avoid bathing within two hours after a meal, or when exhausted by fatigue or from any other cause, or when the body is cooling after perspiration, and avoid bathing altogether in the open air if, after being a short time in the water, there is a sense of chilliness with numbness of the hands and feet; but bathe when the body is warm, provided no time is lost in getting into the water. Avoid chilling the body by sitting or standing undressed on the banks or in boats after having been in the water, or remaining too long in the water, but leave

the water immediately there is the slightest feeling of chilliness. The vigorous and strong may bathe early in the morning on an empty stomach, but the young and those who are weak had better bathe two or three hours after a meal; the best time for such is from two to three hours after breakfast. Those who are subject to attacks of giddiness or faintness, and who suffer from palpitation and other sense of discomfort at the heart, should not bathe without first consulting their medical adviser.”

Advice to the Sick, Anecdote about.—The following anecdote, taken from a work by Laurent Joubert, a physician of the sixteenth century, is related by Professor Fonssagrives in his book called “The Mother’s Work with Sick Children,” and may serve to illustrate these remarks. “It is said that the Duke of Ferrara, Alphonso de Este, once propounded the query of what trade contained the greatest number of persons? One said the shoemakers’; another, the sewing people; others the carpenters, the pettifoggers, the labourers. Gonelle, the famous buffoon, said that there were more physicians than any other sort of persons, and offered to bet with the duke, his master (who flatly declined the honour), that he would prove it within four-and-twenty hours. The next morning Gonelle set out from his abode with a great night-cap on, and his chin bandaged up with a handkerchief, then a hat over all, and his mantle thrown over his shoulders. In this guise he took his way towards the palace of his Excellency by way of the Rue des Anges. The first person he met asked him what was the matter with him, to which he answered ‘An atrocious toothache.’ ‘Ha! my friend,’ said the other, ‘I know the best receipt in the world for that,’ and he rehearsed it to him. Gonelle wrote his name upon his tablets, pretending to write the receipt. A step further on he passed two or three, who put the same question to him, and each one gave him a remedy; he wrote down their names, as in the first instance. And thus pursuing his course through the

remaining portion of the street, he met no one who did not offer him some receipt, all differing the one from the other, each one telling him that his own was well-tryed, sure, and infallible. He wrote down all their names. Arrived at the lower court of the palace, he was surrounded (being known to everybody) by persons who, after learning his trouble, insisted upon giving him receipts, each one said to be the best in the world. He thanked them, and wrote down their names also. When he entered the Duke's chamber, his Excellency cried out to him from afar off. 'Oh! what is the matter with thee, Gonelle?' He replied very piteously, and in a whining manner, 'The cruellest toothache that ever was.' His Excellency then said to him: 'Ah, Gonelle, I know something which would quickly banish your pain, even were the tooth spoiled. Master Antonio Muso Brasando, my physician, never made use of a better. Do this and that, and you will be cured immediately.' Gonelle at once threw down his head-gear and other appliances, exclaiming, 'And you too, sire, are a physician. Look at my list, how many others I have found between my dwelling and yours. There are nearly two hundred, and I have passed through only one street. I will undertake to find more than ten thousand in this town, if I were to go all through it. Find me as many persons of any other trade.' "

This anecdote may serve to show how common this habit of giving advice to the sick was in those days; and in our own it remains very much as it was then. Pity the poor sufferer who should endeavour to put into execution for the sake of trial the advice thus gratuitously given. How can he make use of *all* the medicines thus suggested? and is it not extremely injudicious, when a medical man is in attendance, to make any suggestions of this kind? Surely he who has watched a case carefully through weeks and months of dangerous illness, who knows all the peculiarities of his patient's constitution, is the one best able to give advice, to apply or withhold

remedies as he sees fit; and yet it is strange how little this is considered. Disease is not a thing to trifle with; while we dally it is busy working, and to assist Nature in her endeavours towards recovery requires careful and skilful management, which can only be successfully carried out by those who are competent to do so.

Aërated or Unfermented Bread

(*Lat.* aër, air).—A name applied to bread made by a process by which light bread is produced without the use of leaven. The ordinary process of bread-making by fermentation is tedious, and much labour of human hands is requisite in the kneading in order that the dough may be thoroughly impregnated with the leaven. This process impregnates the bread by the application of machinery with carbonic acid gas, or fixed air. Different opinions are expressed about the bread; but it is curious to note that, as corn is now reaped by machinery, and dough is baked by machinery, the whole process of bread-making is probably in course of undergoing change, which will emancipate both the housewife and the professional baker from a large amount of labour. In the production of aërated bread, wheaten flour, water, salt, and carbonic acid gas, generated by proper machinery, are the only materials employed.

Besides the above-mentioned method of making aërated bread, patented by Dr. Daughlish, there is a process recommended by Dr. Whiting. A little carbonate of soda is put into the flour, then a quantity of hydrochloric acid is added to the water, and whenever the hydrochloric acid comes in contact with the carbonate of soda, the carbonic acid is set free, and whilst the bread is being baked carbonic acid is evolved and common salt is formed. Hydrochloric acid not being always obtainable in a pure state, some people recommend the use of tartaric acid instead. This forms tartrate of soda, which perhaps is not quite so desirable a compound as the hydrochlorate of soda, or common salt. Bread made in

this way keeps better than that made from yeast.

Affusion, Cold (*Lat.* affusus, poured over; from *ad*, to or over, *fusus*, poured).—This has been employed to reduce the temperature in cases of typhus fever, and for this purpose it is a powerful agent. It must, however, on no account be made use of without the sanction of the medical attendant. In its action it is more sudden and more decisive than sponging or the application of lotions. The manner in which it is accomplished is as follows; the patient, having been stripped, is placed naked on a stool in an empty bath or tub, and three or four buckets of cold water, at a temperature of about 40° Fahrenheit, are then to be poured over his head and chest from a height of two feet or more. The greater the height from which the water is poured, the more powerful is its action. The patient having been dried, is again placed in bed. Cold affusion is made use of when the temperature of the body remains permanently above the normal. In its action as a reducer of temperature it is more sudden and more certain than sponging, but requires to be used more cautiously. It is also used where there is great stupor. Its employment is contraindicated, although the temperature be high, in those cases in which the patient feels chilly, or in which the skin is covered with perspiration. Also, if the patient be a woman, and the monthly discharge present, it must not be employed. Being a powerful remedy, cold affusion cannot be repeated more frequently than once in twenty-four hours. The best time for using it is at night.

After-Dinner Sleep.—A practice prevails, which, once indulged in, is very apt to be repeated—that of sleeping after dinner. It is a bad one, and, although irresistibly pleasing for the moment, is sure to be the source of much subsequent discomfort. A half-hour's nap in the day is a poor compensation for the loss of several hours during the night, which is sure to be the result.

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The whole nocturnal repose, in fact, is disturbed; and any one who wishes to secure the full rest required during the twenty-four hours ought never to attempt to obtain a part of it in advance of the proper time. In spite of the old proverb, which says, "After dinner rest a while," an active walk, provided the meal has been a proper one, and eaten with deliberation and with proper attention to chewing the food, will be promotive of digestion, and prevent that tendency to somnolency, the indulgence of which is neither favourable to subsequent comfort nor health. The after-dinner *tasse de café*, when once habituated to its use, is not unfavourable to digestion, but if taken only occasionally, and at a late hour, by those unaccustomed to drinking it, it is sure to deprive them of much of the night's sleep. The *petit verre*, or little glass of brandy, or some strong *liqueur*, should never be indulged in.

After Lifetime at Different Ages.—The following table, taken from Farr and Quetelet, gives the probable after lifetime, at different ages, of males and females in England, and also the mean rate:

AGE.	MALES.		FEMALES.		BOTH SEXES.	
	Mean.	Eng-land.	Mean.	Eng-land.	Mean.	Eng-land.
0	37	39.91	43	41.85	40	45
10	50	47.05	52	47.67	51	51
20	41	39.48	43	40.29	42	43
30	34	32.76	35	33.81	35	35
40	26	26.06	28	27.34	27	27
50	18	19.54	20	20.75	19	20
60	12	13.53	13	14.34	13	13
70	7	8.45	7	9.02	7	8
80	3	4.93	4	5.26	4	4
90		2.84		3.01		
100		1.68		1.76		

See also COMPARATIVE LONGEVITY.

After-Pains.—Pains, usually more severe in those who have already borne children than in those whose first confine-

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ment it is, frequently set in shortly after the termination of labour. They go by the name of "after-pains," and are caused by the contraction of the womb. Their influence is one of a salutary nature, although they may give rise to much suffering. They continue with greater or less severity for a day and a half or two days. With each contraction the amount of discharge generally increases, and there may come away from the womb at such times clots of blood which have accumulated in the interior. Unless these pains are very severe and give rise to much suffering, they do not call for interference.

Age and Hereditary Tendency

(*Fr.* age; *Lat.* *ætas*, an age; *Lat.* *hereditās*, heirship.)—A very important modifying influence is age. The seven ages of man, as portrayed by the great dramatist Shakspeare, seem as if they must hold a place in the study of humanity, at least as long as the Anglo-Saxon race endures; but for our purpose it is more convenient to divide the life of man into youth, or the period of increase; manhood, or the period of maturity; and old age, or the period of decay. Croup, scarlet fever, and other contagious diseases, with bronchitis and pneumonia, are especially fatal in the first of these periods, statistics showing that one-tenth of all children born die during the first month of existence, and that at the termination of the first year after birth only three-fourths remain alive; further, that among city-bred children nearly one-half die before they reach the age of five years. In the second period, that of maturity, which extends from about the twentieth to the fortieth year, age modifies favourably almost all the causes of disease, so that the chances of partial or complete escape from their injurious effects are very much increased. Just the contrary, however, holds good in the third period, that of decline, when the general decay of the powers of life renders comparatively slight causes operative in producing serious maladies. Some one portion of the human frame, like that of any other machine, is

almost always less substantial than the others, and gives way *first*, by its stoppage bringing about the cessation of movement, which we call "life," in all the rest. In this manner the bursting of some little worn-out artery in the brain often produces a stroke of paralysis, or an over-worked valve in the heart gives way and proves suddenly fatal, or cancer, which may be looked upon as a mode of premature local death, invades some vital organ, and slowly, painfully, and mercilessly drags down its victims to the grave. Finally, hereditary tendency, often manifested through long series of generations, is a most potent cause and modifying influence of diseases.

Age, Diet Modified by.—That the young and growing need more food in proportion to their weight than the mature and aged, is one of the unquestioned facts of observation; but there are few who realise how old we are before we stop growing. We do not reach our full height and breadth until twenty-five or thirty, and in some cases even later. The period of most rapid growth is in the early years; and during this period, and especially that portion of it which is called boyhood and girlhood, the amount of nutriment that can be taken is very great. Children need to take food more frequently than adults, and especial care should be taken that they do not long go hungry, for meagre or insufficient food in the days of youth results in stuntedness, or drunkenness, or disease, that no subsequent care can fully remove. The popular theories that children should not eat what they crave, that they should live in a state of subdued starvation, that they should eat only one or two varieties at a meal, and that they should avoid what they like best, and confine themselves to what is more disagreeable, and that they should not drink with their meals,—these, and other similar unscientific and most pernicious heresies, took their origin in the reaction from the gluttony and sensuality of our Saxon ancestors. Children need guidance in the selection of their food, and they should be guided by wisdom and not by

ignorance. The importance of the diet of children no words can exaggerate.

Age, Old, a Relative Term.—

It is an observation familiar to every one, that some persons are older at fifty than others are at seventy, while instances every now and then occur in which an old man, who reaches his hundredth year, retains as great a degree of juvenility as the majority of those who attain to eighty. The period extending from the age of thirty or forty to that of extreme old age is, then, the only variable period in the term of human existence, the only period not fixed by limits which it is not beyond the power of man materially to extend or abridge: a fact abounding with the most interesting practical suggestions.

A celebrated writer has spoken of one dying of old age at twenty-five. Now, however ludicrous this may appear, there are undoubtedly many in our large cities who at this early age begin to manifest the unmistakable signs of old age, such as stiffness of joints, tremulousness of voice, gray hairs, loss of memory, etc. The habits of life at the present day in our large cities of civilization have done much to put us in the condition of those who inhabit tropical climates. With us the approach of old age ought to be greatly more retarded than with those who inhabit the warm countries of the East, because their perfection is sooner attained. But in many of our large towns our youth are put, as it were, into the atmosphere of a forcing house, and so brought into a similar condition with those of more tropical regions. Instead of being of slow growth, and taking long to come to perfection, they are brought under influences which hasten those developmental changes which bring about manhood or womanhood, and by physical excesses, irregular lives, novel reading of an overstimulating kind, abuse of alcoholic liquors, and such like, the approach of old age is greatly hastened. It has been aptly remarked by Colton that "the excesses of our youth are draughts upon our old age, payable, with interest, about twenty years after

date." It is therefore incumbent on those who would attain old age, to avoid everything in early life that may tend to induce premature decay.

Age, Old, Clothing in, Food in, Stimulants in, Habits in, Baths in, Occupation in, Pleasures of, Natural Decay of, Natural Marks of.—See CLOTHING IN, ETC.

Age Old, How to Enjoy it.—See OLD AGE, HOW TO ENJOY IT.

Age, Old, Memory and Hope in.—See MEMORY AND HOPE IN OLD AGE.

Aged, Exercise for the.—In advanced life, the power as well as the inclination for active exercise alike fail, and the strongest inducements are sometimes requisite to postpone the period when all exercise is omitted and the individual becomes completely bedridden. This unfortunate condition should be put off as long as possible, and every means employed to encourage the patient not to neglect the regular, even if moderate, exercise of which his reduced strength still renders him capable.

Agricultural Labourers, Duration of Life in.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Ague (*Fr.* *aigu*, sharp; *Lat.* *acutus*, sharp).—Ague, or intermittent fever, is a fever consisting of paroxysms or periods of fever, between each of which there is a distinct and perfect intermission from febrile symptoms. There are several kinds or species of ague, but the *quotidian*, which returns every day; the *tertian*, which returns every other day; and the *quartan*, occurring on the first and fourth day, are the principal. It is likewise termed *autumnal* ague when it happens in autumn, and *vernal* when in the spring.

Ague, Causes of.—The chief predisposing cause is debility, however induced; but the grand exciting cause is *marsh mias-*

ma, or the effluvia arising from stagnant water, or marshy ground, impregnated with vegetable matter in a state of putrefactive decomposition. Dampness and the night air are particularly favourable to the full operation of marsh miasma. Ague does arise, however, from other causes than marsh effluvia; and it may be produced by sympathy or irritation in the stomach and intestines.

Ague, Chase's Remedy for.—

Dr. Chase, an American physician, says he cured himself of ague after having tried other remedies for three years ineffectually by the following prescription:—Quinine, twenty grains; Dover's powder, ten grains; sub-carbonate of iron, ten grains. Mix with mucilago of gum-arabic, and form into twenty pills. *Dose*—Two each hour, commencing five hours before the chill should set in. Then take one, night and morning, until all are taken. In attacks of ague it is best to take an active cathartic pill immediately after the first "fit," unless the bowels are lax, which is not generally the case.

Ague Districts, Preservation of Health in.—

1. Build your house on elevated ground, to the windward of any swampy ground or marsh, and if possible let a piece of water or belt of trees intervene. 2. Encourage the cultivation of trees about the house. 3. Sleep at the top of the house, and have all the windows closed at sunset. 4. Do not go out either after nightfall or early in the morning, and never before breakfast. 5. If you must be out at night, do not lie down and do not halt under trees. 6. Do not drink water over which the ague poison has passed. 7. Live generously, not too freely, however. 8. Take a dose of quinine occasionally.

Dr. Hall, an American physician, speaking of how to prevent fever and ague, says miasmatic effects can always be prevented in two ways; hence fever and ague, and all classes of intermittents, are preventable and could be swept from the world. The first

precaution is, to eat a hearty meal before going out of doors in the morning in warm weather, and to take supper before sundown. He says, when he began the practice of medicine, he travelled day and night through broiling suns and drenching rains over one of the most malarious districts in the Southern States, and was never sick for a single second; but he never left the house or went outside the door after daylight until he had taken his breakfast. While one class of persons died off like sheep, it was noticed that another class did not die at all. They lived and lived on, indefinitely long, and finally died up. Some of them the author knew; they were old thirty years previously, but were apparently no older then. The French Creole planters would have a cup of strong hot coffee brought to their bedsides every morning before they rose to dress. And the second precaution is, to have a lively fire kindled in the family room half an hour before sunrise and sunset in warm weather, to burn for an hour or longer.

The ague has been often reputed as a curative agent. An attack of the ague may probably have put a stop to some nervous and other complaints. Dr. Elliotson states "that ague has been thought so capital a thing, that some writers contend it never should be cured;" and a proverb once prevailed that

"An ague in spring,
Is physic for a king."

He mentions that Dr. Gregory saw a case of palpitation cured by it, and that Dr. Fordyce had known many cases cured by it. However, we should be very sorry to try it, and should be very sceptical of its doing real good in any case.

Ague, Popular Remedies for.

—Numbers of remedies have been tried for ague, but no remedy is so powerful, effectual, and simple as quinine or cinchona. A century ago, indeed less than that, the web of the black spider was considered a cure for ague, and in some cases it seemed to answer.

"Cobweb is an old and popular remedy for the present fever," says Dr. Graham, "and it is as efficacious as popular. Some writers speak of it as a mere dirty object of vulgar superstition, but they are much mistaken; for ten grains of cobweb given twice or thrice before the expected time of each paroxysm, and continued in this way for three or four days, or longer, as circumstances indicate, will be found a powerful means of putting an immediate and permanent stop to the recurrence of the ague. The patient should, however, be prepared for its use by the previous employment of an emetic and purgative. The only valuable cobweb is that produced by the black spider, which inhabits cellars, barns, and stables. It is sometimes very effectual in arresting the progress of the febrile symptoms in every other kind of fever. Dr. Jackson, a physician of acknowledged accuracy and great experience in the treatment of fevers, observes that it is more abrupt and efficient in its operation than bark or arsenic, or any other remedy employed for the purpose with which he is acquainted."

In Norfolk, in the present day, there are those who believe that swallowing a spider will cure them. Pepper is also a popular remedy, and many take a teaspoonful of pepper in a glass of gin for the purpose. Several remarkable cures have been recorded in which emotional influences have cured an ague, such as great joy or great terror; it is very possible that in this way many old-fashioned remedies did good by acting strongly on the imagination and causing an intense emotional disturbance. The diet should be liberal and nourishing; the patients being much weakened by the attacks, will not bear any depressing influences. Strong beef-tea, milk, and some wine may be given daily, and meat or fish etc., if the patient care for it.

Ague, Symptoms of.—Every fit of ague consists of three stages: a *cold*, a *hot*, and a *sweating* stage. In the cold stage the face and limbs become pale, the features shrink, the sensibility is greatly impaired,

the breathing short and anxious, and a sensation of severe cold is felt over the body, succeeded by shivering and violent shaking. Afterwards, the heat of the body returns, and soon becomes dry, burning, and much above the natural standard; the countenance is now flushed and tumid; there is often acute pain of the head, sometimes slight delirium; the pulse is strong, full, and frequent, and the thirst urgent. These symptoms are followed, first, by moisture of the skin, and then by an universal and equable perspiration, which terminates the fit. The whole paroxysm generally occupies about eight hours. In the intermission, the countenance is apt to be pale and shrunk, and the constitution in general to be affected with languor and feebleness. In the commencement of agues, however, the patient is sometimes free from indispotion. Spring agues are, in general, less severe and obstinate, and less liable to be followed by dangerous consequences, than the autumnal; they are also less liable to return.

Ague, Treatment of.—Ague is a very curable disease, and in this country at least very simple measures may be taken. On the commencement of the actual fit, the patient should be placed in bed between the blankets, and partake freely of warm, diluting, but not stimulating drinks, as water-gruel, barley-water, etc.; and thirty or forty drops of laudanum may be given in a little cinnamon water. In some cases the laudanum is most useful when given directly the cold fit is felt to be approaching; in others, after the commencement of the hot fit. One scruple of the subcarbonate of ammonia, with eight grains of the compound powder of ipecacuanha, and an ounce and a half of mint water, form a draught of much service in moderating the attack, when given on the invasion of the cold fit.

There is no occasion to be over-fussy during a paroxysm, as the patient will come out of it all right. Of all the remedies in the pharmacopœia, none are more valuable than quinine and arsenic in the treatment of ague. Quinine is an alkaloid obtained from various

species of bark growing in Peru and on the slopes of the Andes; other alkaloids, as cinchonine, cinchonidine, and quinidine, are also present in the bark, and exercise a beneficial effect. Expensive as quinine is, it is yet preferable to arsenic, because not only is it more efficacious, but it is not poisonous, and can be left about with safety. Given in large doses it is apt to produce giddiness, singing in the ears, and deafness, but the effects will pass away of themselves. Four or five grains of the sulphate of quinine taken every four or six hours during the interval of an ague fit will generally cure the patient. Very often the cure is immediate, and the patient has no more attacks: more often he has one or two very slight ones, and then becomes convalescent. In hot countries larger doses may be required, and for travellers in aguish districts nothing is more invaluable than a plentiful stock of quinine. If a relapse takes place, quinine or cinchonine must again be taken. Sometimes quinine is disliked, and then arsenic may be tried, but it is very poisonous, and must only be given under medical advice; the injurious effects that should be looked for are a soreness of the throat, vomiting, diarrhoea, pains in the abdomen, sweating, and redness of the eyes and nose.

Ague, Whisky in.—An anonymous American writer says he cured himself of the ague by putting into his boots a half gill of hot whisky, and putting the boots instantly on. The very first day he tried it the fever came as usual, but *there was no chill*; the second day the symptoms were all modified; and after the third application there was no return of the fever or the ague. He says: "I well remember, when a boy, there being a tavern in our neighbourhood where teamsters stopped to rest and water their horses, seeing the carters, instead of drinking their half gill of whisky, pouring it into their boots cold, as a protection against the frost. They told me there was nothing equal to it to warm the feet; that it was better than fire, for the feet remained warm for a long time, and

prevented sickness. It is also excellent for a cold, or when from exposure the feet get wet or damp, and a cold or other disease may be apprehended, I have known it to act like a charm.

Aim of Physic (*Lat. physica*, from *Gr. phusikos*, agreeable to nature; from *phusis*, nature).—The aim of physic is not to provide the means of combining the pleasures of vice with the comforts of virtue. The man who eats or drinks to an unwholesome excess knows how he might prevent his morning sufferings, at the time that he has not energy enough to break through his habits of self-indulgence. The tonic afternoon draught, to restore the tone of the stomach, and create an appetite out of loathing and nausea; the aperient pill at night, to relieve the congestion of the bowels which the stimulating meal will have produced; afternoon exercise in the open air, these, and the like means, help but little men who indulge in the pleasures of the table to retard the approaches of disease, and to render the intervals of indulgence less intolerable.

Air and Exercise for Infants.—After the first two or three days, if the weather be warm, the infant should be taken out for a walk in the nurse's arms. Should the infant be born in winter, it had better remain indoors till spring, when it should be taken out of doors daily. The habit of regular exercise should be thus early begun, and should be continued daily if the state of the weather permits. Care must be taken that the child is sufficiently clothed when out of doors, and there should be always a covering of flannel worn both in summer and winter.

Air Cells of Lungs.—See LUNGS.

Air, Chemical Composition of.—Air is a compound of oxygen (the life-giving principle of nature) and nitrogen, an inert gas apparently added merely to dilute the more active and stimulating in-

gradient. In pure air the nitrogen forms by bulk nearly seventy-nine per cent., and the oxygen twenty-one per cent.; but, as ordinarily found, there are besides from three to six parts in the ten thousand ('03 to '06 of one per cent.) of carbonic acid, with traces of watery vapour and of ammonia.

In 100 parts of pure air there are—

Oxygen	20.99 parts.
Nitrogen	78.97 „
Carbonic acid	'04 „
Watery vapour	} traces.
Ammonia	
Ozone	

In ill-ventilated places inhabited by man or animals, the proportion of oxygen may be reduced to twenty, or even to nineteen, per cent., and the amount of carbonic acid increased to '1, '15, or even '2 per cent. Such alterations in the constitution of the air are not only deleterious and dangerous, if carried too far, but have been proved by actual experiment to be, even in minor degrees, very prejudicial to health, causing great loss of vital force and strongly predisposing to attacks of disease.

Air, Dust in.—See DUST IN AIR.

Air from Lungs, Impurity of.—

The proof that carbonic acid is given off by the lungs and rejected in once-breathed air is very simple, and can be obtained by any one of our readers in a few minutes. This test only requires a small glass tube, eight or ten inches long, and half a pint of lime water, easily made by slaking a lump of lime about the size of a walnut in a quart or so of hydrant-water. All you have to do is to dip the end of the tube to the bottom of the bottle of lime water, and then breathe out the air from your lungs for half a minute through the pipe, so that it may bubble up through the water. The clear fluid will very soon become cloudy, almost milky, from the formation of carbonate of lime by the union of the carbonic acid expired from your lungs with the lime which the water has dissolved.

Air, Fresh, Vital Importance of.—See VITAL IMPORTANCE OF FRESH AIR.

Air, Fresh, when Dangerous.—
See FRESH AIR, WHEN DANGEROUS.

Air, How to Breathe the.—See BREATHING.

Air in Ill-Ventilated Places.—

As air which has been breathed has lost some of its life-giving power, and has, besides, become contaminated with useless and injurious refuse materials, it is obvious that we had better avoid taking it again into our lungs, even were it as pleasant as fresh portions of the atmosphere. How much more, then, must every refined and cleanly person shrink from inhaling into the very recesses of his or her body air which is loaded with the foul emanations and worn-out refuse cast off at every breath by the filthy, perhaps diseased, people who push their way into most crowded places, and especially into the ill-ventilated halls, lecture-rooms, theatres, etc., of our large towns and cities. If it were anything else but air, the idea of using it thus at second-hand, after its ejection by dirty and unwholesome persons, would be horridly disgusting; but because these impurities of air are invisible to the naked eye, they are drawn into the lungs of refined gentlemen and delicate ladies without a thought of their degraded nature and origin, or of their poisonous nature.

Many persons suppose that they fulfil all the laws of cleanliness when they have bathed and washed the surfaces of their bodies sufficiently with pure water. But cleanliness, in its true comprehensive meaning, cannot be carried out to meet the wants of the animal economy unless the lungs and skin are equally as well bathed with fresh air. "Our senses revolt," says one writer, "at the mere offer of dirty water to drink; but Nature displays an equal repugnance when dirty—that is, impure—air is offered for breathing; and no less injustice is done to the lungs by the inhalation of foul air, in which are floating, at the same time, par-

ticles of fine dust, arising from different substances in manufacture, than would be to the skin, if, first ditch or gutter water, and then sand and dirt, were sprinkled over it. The very idea of swallowing, or even tasting, the fluid substances ejected as excreta, or thrown off by disease from the body of another person, or even from our own, is abhorrent to all; and yet how few scruple about receiving into their lungs, by respiration, the impure exhalations from the lungs of everybody in the same room with themselves! But they are doing more at this time: they are inhaling not only the foul air which escapes from the lungs, but, in addition, the cutaneous emanations of all present on such an occasion."

Air in Room, Change of.—The difficulty of changing the air of an apartment often enough to maintain the standard of purity from respiratory contamination, is very much increased by the necessity we are under of so arranging the flow of air that the inhabitants of the room shall not be subjected to draughts, and this desirable object can only be attained by having the number of cubic feet of space allotted to each individual comparatively great. It has been proved by further direct observation, that with the best ventilating appliances, and if the air is properly warmed, we may change the air of a room containing 420 cubic feet (a chamber of about 6 feet wide, 7 feet long, and 10 feet high) six times in an hour without creating appreciable draughts. With natural ventilation, however—that is, ventilation from the cracks of doors and windows—it is almost impossible to replace the air of a chamber more than three times in an hour without exposing the inmates to unpleasant currents of air, and therefore, in order to supply the amount we have just declared to be requisite, without causing injurious draughts, persons should not congregate in a room to a greater number than one to every 1,000 cubic feet, and this only when the best natural ventilation is secured. According to this rule, an apartment 10 feet high, 10 feet wide, and

20 feet long, should contain two people; and in a chamber 20 feet square and 10 feet high, four persons, *but no more*, might be allowed to sit, eat, or sleep. Of course, such laws of health are constantly outraged by the poor and the ignorant, as well as by the parsimonious and the foolhardy; but sooner or later such violations are sure to entail their own punishment, and there is no doubt that much of the dyspepsia, neuralgia, debility, premature old age, etc., so common among persons who spend a large portion of their time in close, ill-ventilated rooms, is due to the deleterious impurities of second-hand air, which should never be admitted into the system.

Air in the Soil.—Nature, in its beneficence, is very profuse in supplying the breath of life. The air not only abounds above and about us, but under us. This, though not discernible by our senses, is easily made manifest by the tests of the physicist. All soils contain air in a greater or less proportion. It forms no less than 35 per cent., or about one-third, of the whole volume of gravel, and a considerable part of that of sand, clay, and even of some rocks. Sandstone, which is hardly less porous than loose sand, contains a notable proportion of it. This air of the ground is not torpid and stagnant, as might be supposed, but is readily and constantly put in motion by the same forces which give movement to that of the atmosphere. The wind blowing upon the surface of the earth stirs the air within it, and any difference of temperature above and below ground gives more or less rapid circulation to subterranean as well as superficial currents.

The pressure of the heaviest superstructures is unable to resist the ascent of the air, and thus every building raised by the hand of man is ventilated below the ground as well as from all the surrounding atmosphere. This subterranean supply of air might be a source of health, but it is generally made by perverse ingenuity a cause of disease. Wherever man fixes his abode, he diligently sets to work contami-

nating all that he touches; so that the breath of life is only to be found in its purity where there is no living human being to need it.

The soil, which naturally contains wholesome air, and gives facility to its every movement, is not less permeable by poisonous gases, which are often found to pervade and issue from it. All large cities and populous towns may be said to be lying upon a stratum of poison, ready to be cast, like the venom of a hidden serpent, upon everyone who passes. It is easy to find illustrations of the fact that people are poisoned through the ground, since it is almost a daily occurrence.

There can be no doubt that deleterious gases which enter the ground will find their way out through the porousness of the soil, and, entering occupied buildings, deteriorate the health and destroy the life of the inhabitants. This is facilitated by the greater warmth of houses during winter producing a draught from the colder ground. There are few dangers to a dwelling from without which are more to be feared than these gaseous emanations from the soil. They often enter into our most secluded interiors without revealing themselves at first to the senses, and are only finally recognised by the havoc they make. There are no more insidious and fatal poisons. It becomes, therefore, of the utmost importance for health and life to keep the ground unpolluted. By the removal of all dung-heaps, cesspools, and other sources of corruption, and a thorough system of drainage, with the fullest supply of pure water, it is possible to do a great deal; and whatever can, should be done towards preventing the contamination of the air from the soil, and to save us from being infected by exhalations from below, and dying in our pent-up houses like poisoned rats in their holes. People are very apt to suppose that when an offensive thing is underground, there is no further annoyance to be feared. This, however, is a fatal mistake, and thousands of lives have been sacrificed to it.

The evils arising from the impurities of

the soil may be slightly mitigated, perhaps, by spreading a thick coat of cement over the ground of the vaults, cellars, and court-yards, but this will indeed be only a mitigation, and nothing effectual can be done without thoroughly getting rid of all sources of corruption, or removing them to a remote and safe distance from the dwelling.

It is a very good plan for persons who have learned the value of thorough cleanliness, to go about, near to, and in their houses, in the cool of the evening, observing carefully whether there are then any disagreeable smells which can be perceived. Very often unpleasant odours can be detected in the chill damp evening in places which are entirely free from scents during the day.

So long as the warm sun is shining, it raises any poison-vapours that are in the act of being bred there rapidly into the air, and scatters them freely. But when the sun has set, and the atmosphere has become cold and moist, the poison-vapours get entangled in the moisture, and float with it along the ground until they are dense and strong enough to be discovered by the nose.

Air, Organic Matter in.—*See* ORGANIC MATTER IN AIR.

Air Passages, Foreign Bodies in.—Morsels of food more frequently than other substances get into the larynx or trachea, the accident happening when a person is engaged in laughing or talking when the mouth is full of food, the symptoms being sudden spasmodic cough, protrusion of the eyes from the sockets, blood or froth issuing from the mouth and nose, the patient gasps for breath, turns black in the face, and perhaps falls down insensible. If the morsel of food be light and of small size, it is sometimes expelled during a fit of coughing. Many bodies may find their way into the larynx and trachea,—coins, cherry-stones, beans, or in fact anything which may happen to be in the mouth,—and their presence sets up precisely similar symptoms. Inversion of the body, com-

bined with a shaking or jogging motion, will sometimes cause the foreign body to fall through the larynx, as in the celebrated case of Mr. Brunel, into whose air passages a coin accidentally made its way. The operations of laryngotomy and tracheotomy are generally needed.

Airing Clothes.—The water-absorbing power of articles of clothing is very considerable, and all clothes, whether from the laundress, or after remaining unworn for some time, should be carefully aired before being taken again into use. An ordinary shirt, exposed to no unusual circumstances, contains three-quarters of an ounce of water, a pair of trousers an ounce, a coat two ounces, and a waistcoat quarter of an ounce, and so on in proportion. This necessarily is evaporated by the loss of heat from the body, which is thus more or less reduced. With sick, feeble, or aged persons, with infants and young children, this becomes an important consideration, and should receive attention.

Airing Room.—It is said that a room may be aired or ventilated—that is to say, the air in the room may be completely changed and renewed—by swinging the door of the apartment rapidly to and fro. To make this effectual the window should be opened slightly at the top; the motion of the door will expel the bad air from the room, and its place will be immediately supplied by fresh air entering through the opening at the top of the window.

Albinos (*Lat.* albus, white).—Human beings who possess a skin of a peculiar reddish or unnatural white tint, with corresponding yellowish-white or milk-white hair, and red, or at least very light blue or grey eyes, are called albinos. The cutaneous organ has sometimes a roughness, which has been construed as an approach to a degree of leprosy. The hair of all parts of the body is unnaturally white and soft; it has not the snowy whiteness of old age, nor the elegant light yellow or flaxen appearance of

the fair-haired German variety; but it is compared to that of milk or cream, or of a white horse. The eyebrows, eyelashes, beard, the hair of other parts, and often a soft down covering the whole body, are of the same colour. The iris is of a pale rose colour, and the pupil intensely red; these parts, in short, are exactly similar to the corresponding ones in white rabbits and ferrets.

The characters of the albino arise from a deficiency of the colouring principle common to the skin, hair, and eyes. Thus the former has the hue which its cellular and vascular texture produces; the hair is reduced to its simple organic groundwork; and in the eyes, which are entirely destitute of pigmentum, the colour of the iris depends on the fine vessels which are so numerous in its composition, and that of the pupil on the still greater number of capillaries, which almost entirely form the choroid membrane.

The close connection of these parts, in respect to their colour, is evidenced by the fact that neither is ever separately affected.

The state of the eye is the principal source of inconvenience. The absence of the black pigment, which has the important office of absorbing superfluous portions of light, renders the eye preternaturally sensible of this stimulus. Strong lights affect the organ painfully; even the glare of open day is too much. Hence the eyelids are more or less closed; the eyes are described as weak and tender; and sometimes as affected with chronic lippitude. These evils are balanced in some measure by superior powers of vision in twilight, dusk, or imperfect darkness.

Albumen (*Lat.* albus, white).—Albumen and fibrine are two constituents in the body, which contain the four organic elements, oxygen, hydrogen, carbon, and nitrogen. Albumen differs from fibrine chemically but very slightly. It is, however, soluble in water, and easily separable from it by heat, alcohol, nitric and other

mineral acids. It is found dissolved in the blood, where it exists in the proportion of about four per cent. It constitutes the chief compound of nerve matter, out of which the nerves are formed. It enters into the composition of the eggs of all animals. Its property of coagulating when boiled, forming the white of the egg, is well known. Fibrine is found in small quantities in the blood, but is principally distributed over the body, of the muscular tissues of which it constitutes a large proportion.

Alcoholic Beverages (*Fr.* alcohol; from *Arabic*, *al kohol*, fine powder of antimony, used for painting the eyebrows. Later the term was applied to highly rectified spirits, to which the Arabic term has really no application or reference).—Alcohol is a colourless limpid fluid, possessed of a faint but pleasant odour and a hot pungent taste. It constitutes the characteristic compound in all fermented liquors, and it is to alcohol that they owe their intoxicating property. The fermentation of sugar, and other saccharine matter, is the only means of obtaining alcohol, and the best vegetable substances from which it is to be got are naturally those containing most sugar or most starch, which starch can be converted into sugar. The principal alcoholic drinks in ordinary use are shown in the table on this page, which exhibits the proportions of alcohol and carbon contained in each. This table is taken from Dobell's book on "Diet and Regimen."

In the table on the following page, extracted from "Health Lectures for the People" (Edinburgh, 1881), we have the percentage by volume of absolute alcohol in several common alcoholic beverages, with the quantity of the beverage representing about one ounce of absolute alcohol.

It has been said by Dr. Graham that "ardent spirits of every description are, in their nature and ordinary effects, extremely unfriendly to the human constitution, and the art of distillation is, beyond all doubt, the most fatal discovery, in respect of the

health of the community, which the ingenuity of man ever devised."

ALCOHOL TABLE.

The *weight* of absolute alcohol (sp. gr. 796 at 68° F.) and of carbon, dissolved, in *measured* quantities of spirituous liquors.

SPIRITUOUS LIQUORS.	1 oz. Avolr.	1 oz. Avolr.
	abs. Alcohol is contained in fluid oz.	Carbon contained in fluid oz.
ARDENT SPIRITS—		
Proof Spirit . . .	2.26	4.3
Whisky	2.6	5.0
Brandy	2.7	5.0
Rum	2.8	5.3
Arrack	3.0	5.8
Gin	3.2	5.5
WINES—		
Roussillon	6.4	8.6
Sherry	6.6	10.2
Cape Madeira	6.8	11.0
South African Port . .	6.8	10.0
Port	6.9	10.2
Bucellas	7.3	11.2
Marsala	7.5	11.7
East India Madeira . .	7.6	11.3
Frontignac	9.0	7.8
Champagne	12.6	11.3
Hock	13.4	20.4
Hungarian Red Vöslau .	14.1	21.2
Burgundy	15.2	23.8
Moselle	15.2	23.3
Claret	16.3	23.4
Sauterne	19.0	27.2
Hungarian White } Neszmely }	19.0	28.8
CIDER	64.0	40.0
MALT LIQUORS—		
Ale, Burton, Bass (184/	12.5	9.0
" " " (3) 60/	14.2	13.0
" Pale " (.) 0/	19.0	17.5
" India (Gardner, ×54/)	23.0	28.0
" Bottled { Scotch (Edin.) }	19.0	13.1
" Pale "	25.0	20.5
" " Eightpenny " . .	22.7	22.2
" Family, 1/- gall. . .	24.9	22.0
" " Fourpenny " . .	25.4	23.0
Stout, Dublin (bottled)	20.8	16.7
" London	21.5	18.9
Porter, London	35.6	26.6

BEVERAGE.	Percentage of absolute Alcohol.	Average percentage of absolute Alcohol.	Quantity representing about one ounce of absolute Alcohol.
SPIRITS—			
Brandy	50 to 60	50	2 ounces, or 1 small wine glass.
Whisky	50 „ 60		
Gin	49 „ 60		
Rum	60 „ 77		
STRONG WINES—			
Sherry	16 „ 25	20	5 ounces, or 2 wine glasses.
Port	16 „ 23		
Madeira	16 „ 22		
Marsala	15 „ 25		
LIGHT WINES—			
Bordeaux (Clarets).	68 „ 13	10	10 ounces, or 4 wine glasses.
Rhone	87 „ 13.7		
Champagne	58 „ 13		
MALT LIQUORS—			
Beer	1.2 „ 10	5	20 ounces, or 2 tumblers.
Ale			
Stout			
Porter			

Alcoholic Liquors, Sustaining Power of.—“The sustaining power of alcohol in health or disease,” says an eminent physician, “is very great. A lady friend of mine, on account of the severe illness of her son, was obliged to confine herself very closely to the duty of nursing, with great loss of meals and of rest. Owing to intense and long-continued anxiety she became so reduced that she could scarcely eat any solid food whatever, and for more than two weeks she lived almost exclusively upon lager beer, of which she took some half-dozen bottles daily. This, with now and then a bit of cracker, was her only nutriment. At the end of that time she was not very greatly reduced in weight, and retained a fair share of vigour.”

Such exclusive dependence on alcoholic liquors is, of course, to be deprecated, except in peculiar emergencies, where nothing else can be obtained or nothing else can be tolerated. Used in this way, even the mildest forms of stimulants will more than likely bring on or aggravate organic disease. There are crises in life, however, when this power of alcohol to sustain the system may prove a signal blessing.

As the years draw on apace, however, and the forces of life fail, wine becomes a valuable aid and comfort. The weariness

of age, with its manifold annoyances, craves a slight stimulant narcotic; the feeble digestion needs strengthening; the general failure of force is well met by a substance whose assimilation in the system shall yield without effort much of power.

It is often the case that stimulants and narcotics, which in youth are of such doubtful advantage, in the decline of life are as beneficial as they are grateful.

By gently stimulating the jaded digestion, by giving tone to the exhausted brain, by equalising the languid and unbalanced circulation, and by economising the wasted tissues, they beautifully and efficiently sustain the system when the desire for positive nutriment has long been blunted, and the forces of assimilation have well-nigh lost their mysterious power. Then they serve a most beneficent purpose, to sweeten and prolong the evening twilight of existence, to make less perceptible the slow darkening of the lights in the windows, more gentle and easy the sure descent into the depths of the dark unknown.

Surprise is often expressed by individuals that as they advance in life they can use with benefit, or at least without injury, substances which in their previous history they could not bear. Our bodies change continually, without regard to age. They

are changed by the weather; by our occupation and duties; by our joys and woes; by our diet and sleep, or the want of it; by all that makes up our life; they are changed even when we are the least subject to external influences. The elaborate chemistry of the body never rests. I am not the same individual to-day that I was yesterday; to-morrow I shall be different from what I am to-day; a month hence I shall be a new being; thus in the course of life I personate numberless different, and even opposite, physical characters. A stimulant or narcotic, therefore, which I take to-day, affects me very differently from what it did last year, because I am not the same person.

Professor Huxley tells the story that when he was a young man he never could bear to smoke, and all attempts to do so left him on the floor of the room where he made the attempt. Recently, in middle life, he has tried it, and finds in it enjoyment without apparent harm. There is a story of a Greek philosopher who vowed that he never would call in a doctor; but when he was sick, he sent for one, and when he was reproached for his inconsistency, he replied, "But I am not the same person that I was."

To-day I cannot take coffee without immediate and perceptible injury; ten years hence I may indulge in it freely without harm. Time was, perchance, when tea kept me awake the whole night long; but now it seems rather to dispose me to slumber. You wonder that the cigar in which you formerly indulged without discomfort now excites a myriad unpleasant and harassing symptoms; that the glass of cider which once caused you intense headache now serves as a tonic and appetiser.

In the mentally overworked, wine in moderation is perhaps also beneficial. In all cases it must be borne in mind that there is great danger, not only from excess of a weak alcoholic drug, but also from undiluted strong spirits, even when taken in small quantities.

To lay down a fixed amount of alcohol as the correct daily supply of an aged or overworked person is evidently not possible,

individual idiosyncrasies and habits vary too greatly and are too powerful. It is as much as can be said that, without directions from a physician, a half pint of light claret in the twenty-four hours should never be habitually exceeded.

Nervous temperaments cannot usually bear stimulants and narcotics of any kind so well as the phlegmatic or the bilious temperaments. Organisations that are generally susceptible to irregularities of diet, to changes of the atmosphere, to fatigue of overwork, or to mental impressions of any kind, are usually susceptible to stimulants and narcotics. Nervous people, therefore, need to be specially cautious in forming habits of indulgence.

Alcoholism.—Long-continued abuse of intoxicating liquors leads to a serious change in the blood, and then of the various tissues of the body. The liver may become fatty or scirrhus, the heart weak and flabby, the kidneys are liable to waste, the lungs to fail, and the patient to grow short of breath. The brain also shares the general mischief, and many of the nerve cells waste through being badly nourished; the mind in consequence becomes affected; there is loss of memory, giddiness at times, disagreeable dreams and restlessness at night. The patient wakes up in the morning with no appetite for breakfast, and a feeling of sickness. His nervous system, too, is weakened; any excitement or trouble affects him; in advanced cases the tongue and hand tremble, and he is easily made to weep. If the heart be affected, he may be troubled with fainting, which may at length prove fatal. Sooner or later the health is impaired, and any acute illness will quickly carry him off: such a course of life induces premature old age.

Alcoholism, Treatment of.—Very little can be done for the habitual drunkard; a sedative may be given at bedtime to enable him to sleep better, and for the dyspepsia or indigestion which accompanies this disease, some bitter tonic, as

gentian or quassia, may be given, with nitric or hydrochloric acid two or three times a day.

Alder Wine.—When well fermented, and having a proper addition of raisins in its composition, alder wine is frequently a rich liqueur. It keeps better than many other home-made wines for a number of years, and was formerly supposed to possess many medicinal qualities; but these experience does not seem to sanction, and the virtues of the alder, like those of so many other simples formerly prized, have sunk into oblivion. (See also ELDER WINE.)

Ale.—See BEER.

Alexis and Martin, Case of.—

See DIGESTIBILITY OF FOODS.

Alimentary Canal.—The avenue for food, or the alimentary tract, passes through the mouth into the pharynx, which it follows down directly into the gullet (food pipe, esophagus), continuous with the pharynx, and leading into the stomach. This gullet is located behind the upper part of the air tube (larynx and trachea), and rests against the spinal column, or backbone. The gullet, however, is a flaccid tube, its anterior and posterior walls being in contact, except when separated by the entrance of morsels of food or swallows of liquid.

The alimentary canal extends from the mouth to the anus, and is, in an average man, about thirty feet long. If the mucous membrane that lines it were spread out, it would be found to be nearly fifteen square feet.

A diagram of the abdominal portion of the alimentary canal is given in the annexed illustration: *s*, the stomach; *a*, the lower part of the esophagus or gullet; *b*, the duodenum; *c*, the termination of duodenum and commencement of the coils of the small intestine extending to *d*, which marks the termination of the ileum or third portion of the small intestine in the *caput cæcum*, in



THE ALIMENTARY CANAL.

which the large intestine begins; *v*, the vermiform process: *e-f*, ascending portion of colon; *f-g*, the transverse portion; *g-h*, the descending portion; *h-i*, the rectum.

Alkaline Draught.—See DRAUGHTS.

Alkaline Washes for Teeth.—
See HYGIENE OF THE MOUTH.

Allopathy.—See HOMŒOPATHY DEFINED.

Allspice.—This is the popular name given to pimento or Jamaica pepper, known to naturalists as *Eugenia pimenta*, and be-



PIMENTO.

longing to the order of Myrtaceæ. It is an expensive spice, and is considered more

mild and innocent than most other spices; consequently it is much used for domestic purposes, combining a very agreeable variety of flavours.

Almond Form of Eye.—The almond shape of the Eastern beauty's eye depends upon the length of the fissure between the lids, and its effect is sometimes imitated by prolonging a shadow at the outer angle of the commissure with a few



A CHINESE LADY.

touches of the "cosmetic pencil." In the Chinese the outer angle of the commissure is much higher than the inner, giving the cleft an obliquity upwards and downwards, as in the above illustration. This has a marked effect upon the expression of the face, which, at least to Caucasian taste, is always sinister. The pictures of Mephistopheles owe much of their devilish cast to the twitching upwards of the external angles of the lids.

Almonds.—Bitter and sweet almonds are produced by different varieties of the same tree. The bitter almond, however, contains a peculiar ferment called emulsine, which is capable of changing a nitrogenous matter, present in the bitter almond and the sweet, into prussic acid, the essential oil of bitter almonds and glucose. This change takes place when bitter almond meal is mixed with water and gently warmed. The brown coat of the almond kernel is not



ALMOND AND BLOSSOM.

digestible, and ought to be removed by pouring boiling water on the kernels and then peeling them.

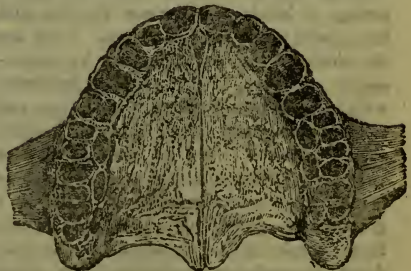
Aloes, Compound Decoction of.—See DECOCTIONS.

Alterations in the Eye.—Any cause which lowers the circulation deadens the eye. "I remember," says Mr. Darwin, in his "Expression of the Emotions in Man and Animals," "seeing a man utterly prostrated by prolonged and severe exertion during a very hot day, and a bystander compared his eyes to those of a boiled cod-fish."

Alum Gargle.—See GARGLES.

Alum Gargle with Myrrh.—See GARGLES.

Alveolar Process (*Lat.* al'veolus, a small hollow or cavity; from al'vus, the



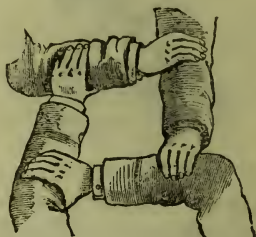
THE UPPER JAW, WITH TEETH EXTRACTED.

belly).—The alveolar process consists of two plates of bone, an outer and an inner, forming borders to the jaws and supports to the gums. These are connected by transverse plates, dividing the space into numerous cavities, which form the sockets of the teeth. An upper jaw from which the teeth have been recently extracted is illustrated in the preceding page.

Amaurosis (*Gr. amau'ros*, obscure).—Before the invention of the ophthalmoscope enabled us to examine the interior of the eye, a number of unseen diseases were classified together under the general term of amaurosis, which was humorously, but not inaptly, described as a "disease in which the patient sees nothing and the physician sees nothing." Now this vague term is rarely used, and only to indicate paralysis of the optic nerve, or blindness resulting from disease of the brain. *Tobacco* amaurosis is a form of partial paralysis of the optic nerve, met with in excessive smokers. Excessive use of alcoholic drink is thought, by some authorities, to induce the same condition.

Amaurosis, Supposed Symptoms of.—There is a popular notion that floating specks before the eye, or *Muscae volitantes*, are a symptom of "Amaurosis," and they consequently very often occasion much unnecessary uneasiness, particularly to persons of nervous temperament. They have the form of small spots or circles, strings of beads or gossamer threads, and float about in the field of vision. They are the shadows cast on the retina by microscopic opacities in the vitreous humours, which do not usually attract attention, and are frequently met with in perfectly healthy eyes. "*Muscae*" may be made evident in any eye by looking through a small pinhole in a card at a bright light covered by a ground-glass globe. The dread excited by these specks in the minds of people who devote themselves to watching them, sometimes almost amounts to monomania.

Ambulances (*Lat. am'bulans*, walking).—The term "ambulance" has a different signification amongst English and foreign writers. On the Continent it means a field hospital attached to an army, and moving with it, for the primary reception and care of its sick and wounded. In England the term is often applied to the conveyance by which the sick and wounded are carried from the field of battle. Ambulance conveyances are constructed for carrying patients, either lying at full length or sitting. The recumbent position is undoubtedly the best in the case of severe wounds, and in cases of shock or faintness from hæmorrhage, as it is the position in which the several parts of the body are subjected to the least amount of concussion. The sitting posture

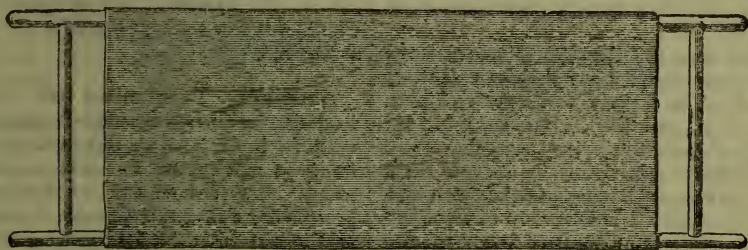


SEDAN CHAIR USED IN THE TRANSPORT OF THE WOUNDED.

is, as a general rule, only adapted for those whose injuries are of a comparatively slight nature. The semi-recumbent position is very desirable in wounds of the chest, owing to the feeling of oppression in breathing preventing the recumbent position, and the jolting of the sitting. If no conveyance be at hand, the assistance of bearers must be resorted to, and it will be convenient to mention some method of affording help when only one attendant or bearer is at hand. If the wound be in the head, neck, or upper part of the trunk, the patient should partly support himself, with a stick in one hand (or musket), while his other hand and arm lean upon the upper part of the back and distant shoulder of the attendant who walks by his side. At the

same time the attendant should place his near arm across the neck of the wounded man, reaching round and partly encircling his body with the forearm and hand, so as to support the trunk. If more than one attendant is available, a regular litter is at hand. The first method they may adopt is that of carrying the patient by the two bearers joining hands beneath the thighs, while their arms which are not thus occupied are passed round his loins. A second and better method of joining two hands for the semi-recumbent support of a patient is as follows: The advanced right and left hands of the two bearers are closely locked

Amputation (*Lat.* *amputatus*, cut off; from *am* (*Gr.* *amphi*), round about; *puto*, I prune trees).—In ancient times the amputation of a limb was a much more dangerous affair than now; there was a considerable chance of the patient's dying during its performance, as surgeons had no efficient means of restraining the bleeding. They rarely risked removing a large portion of the limb, and when they did so, they cut in the gangrened parts, where they knew the vessels would not bleed. The smaller limbs they chopped off with a mallet and chisel, and in all cases they had at hand hot irons for searing the raw surfaces, boiling



SIMPLE FORM OF STRETCHER USED IN THE TRANSPORT OF THE INJURED, CONSISTING OF A PIECE OF STRONG CANVAS STRETCHED BETWEEN TWO POLES.

together, and the wrists brought into contact; at the same time their other hands are made to rest upon and, in a certain degree, grasp each other's shoulders on the same sides respectively. One of the best methods is that of a four-handed seat with crossed arms, known commonly as the "sedan-chair." The sick transport conveyances are: (1) conveyances borne by men, such as hammocks, stretchers, dhoolies, swinging litters; (2) conveyances wheeled by men; (3) conveyances borne by animals; (4) wheeled conveyances borne by animals, such as carts and waggons; (5) conveyances moved by steam on railways.

Ammonia, Aromatic Spirit of.

—See MEDICINES, HOME.

Amount, Right, of Exercise.

—See EXERCISE, RIGHT AMOUNT OF.

M. D.

oil in which to dip the stump, and various mosses, fungi, and resins, which were credited with the power of arresting hæmorrhage. Some bandaged tightly the limbs they wished to remove, so that they mortified and dropped off; whilst others amputated with red-hot knives, or knives made of wood or horn dipped in vitriol. These barbarous methods of procedure, fortunately for us, are no longer required.

The desired power of controlling the hæmorrhage was obtained by the invention of the tourniquet by a French surgeon—Morel by name—in 1674.

The ancient surgeons tried to save a covering of skin for the stump by having the skin drawn upwards by an assistant, previously to using the knife. Towards the close of the seventeenth century it was suggested to cut semi-circular flaps on one

or both sides of a limb, so as to preserve a fleshy cushion to cover the end of the bone. Both these methods are now employed, and are known as the "circular" and the "flap" operations: the latter being that most frequently used in this country.

A "flap" amputation is thus performed: "The patient being placed in the most convenient position, an assistant compresses the main artery of the limb with his thumb, or a tourniquet is adjusted over it. Another assistant supports the limb. The surgeon with one hand lifts the tissues from the bone, and transfixing them with a long narrow knife, cuts rapidly downwards and towards the surface of the skin, forming a flap; he then repeats this on the other side of the limb. An assistant now draws up these flaps, and the knife is carried round the bone, dividing any flesh still adhering to it. The surgeon now saws the bone. He then, with a small forceps, seizes the end of the main artery, and, drawing it slightly from the tissues, an assistant ties it with a thread. All the vessels being secured, the flaps are stitched together with a needle and thread, and a piece of wet lint is laid over the wound. An expert surgeon can remove a limb thus in from twenty to sixty seconds."

Anæmia (*Gr.* *a*, not; *haima*, blood).

—This is a condition in which there is an impoverished state of the blood, and when the patient is very pale and in a state of general debility. Anæmia may exist alone or in conjunction with other exhausting diseases, as consumption or cancer. In the first variety the patients are generally young women employed in close workshops and confined places from morning till night; or women who have lived poorly, and, having had several children, are suffering from over-lactation. In such people the whole surface of the skin is paler than usual, and the lips and lining membrane of the eyelids, instead of being rosy, are of a pale pink colour. There is also a feeling of general debility, and an inability for much exertion. Palpitation of the heart, headache, pain in the

back and in the left side, are commonly met with. This disease arises chiefly from want of pure air and light, and from living badly.

Anæmia is often associated with a temporary cessation of the menstrual function, but this is usually restored with an improvement of the general health. The habits of town life predispose to this disease in a great measure; and in all cases country air is most beneficial. In young girls, tight-lacing is often injurious, as it prevents due expansion of the chest and the free entrance of air into the lungs, a process which is most important for the various changes which are constantly going on in the blood. Persons who are anæmic are very often nervous and hysterical, and all sources of mental worry or anxiety should be avoided as far as possible.

Anæmia, Treatment of.—The treatment consists of moderate exercise every day in the fresh air, and working and living in well-lighted and well-ventilated rooms. The diet should be light and nourishing; a moderate amount of animal food should be taken, but anything which causes indigestion should be avoided. Stimulants should not be resorted to, but a glass of beer with a meal may be beneficial. A cold bath in the morning is often of great service, and for those who can afford it a change to the seaside or some place where the air is bracing and refreshing may be very useful. Tonic medicines are of great value, especially those which contain iron. When women are at the same time suffering from over-lactation, it may be advisable to wean the child. Hot and crowded rooms should be avoided, and late hours are injurious.

Anæmia, Mixture for.—*See* MIXTURES.

Anasarca (*Gr.* *ana*, through or throughout; *sarks*, flesh).—A name given to an accumulation of the watery part of

the blood, called serum, in the cellular tissue of the body. It may result from pressure upon the veins in some part of their course, giving rise to excessive accumulation of fluid in the capillary vessels with consequent exhalation beyond what the absorbent vessels have power to dispose of.

Anasarca.—See DROPSY.

Anatomy (*Gr.* *an'a*, up, *tom'e*, cutting; from *tem'no*, I cut).—By the study of anatomy we acquire a knowledge of the structure of the human body and of its various organs. It is a science which takes up and examines the different parts of the body, exactly as one might examine the various parts of a complicated machine, and tells us all about their situation, form, and character.

Anecdotes of Medical Men.—

Medical men have been the subjects of many anecdotes, of which a few may well be given in this volume.

1. It is stated that the doctors of Yokohama were formerly required by law to keep a lantern burning in front of their houses for a week after each death among their patients. One night the newly-arrived French ambassador found himself compelled by his wife's sudden illness to call in immediate medical aid. Being made aware of the law, he started in quest of the most successful physician of the town, but, to his distress found that all the fashionable doctors had their *façades* brilliantly illuminated. At last he observed one obscure doctor's which was modestly lighted by only five small lanterns; but, on his ringing the bell and explaining that the case was urgent, the doctor appeared coy, and evidently suspected some misapprehension. At last, on the ambassador expressing great confidence in his professional skill, as attested by the imperfect lighting of his house, he explained with the utmost frankness that he had been in practice only for the last hour. The ambassador, we are assured, was devoted to his wife, and went elsewhere.

2. A Frenchman who had lost an appointment he held, having publicly declared that it would cost the lives of more than five hundred persons, this statement came to the ears of the police authorities, who had him arrested, and asked him what he meant by such a threat? "I have threatened no one," he replied; "I only meant that I was about to turn doctor."

3. An octogenarian physician being asked how he had preserved his health so well, replied, "I live by my prescriptions, and never take them."

4. There was a time when it was common for persons in France to make their wills if they dreamed that they saw a medical man, as this was believed to be a sign of approaching death.

5. A medical man relates that once, when travelling through Germany, he was invited to the house of a rich old gentleman who had been an invalid for twenty years. This gentleman had at first consulted two physicians of celebrity, but as they quarrelled about his complaint, he determined to seek other advice. But first he resolved, that if he could find three doctors who perfectly agreed upon his case, to allow himself to be treated by them, but not otherwise. For this purpose he consulted many eminent physicians, whose opinions and prescriptions he had recorded in a book kept for that purpose, which, as may be supposed, had cost him a pretty sum of money, but he had never found three who agreed respecting his case. This book had the appearance of a ledger in large folio, and was kept in the form of tables. In the first column were the names of the physicians, amounting to 477; in the second, those of the disease, with explanations concerning its nature: of these there were 313, differing importantly from each other; in the third column were the remedies proposed: these consisted of 832 prescriptions, containing in all 1,097 remedies. The sum total of fees appeared at the end of the page.

Aneurism (*Gr.* *an'eurus'ma*, a widening or expansion; from *ana*, through,

eu'rus, broad).—An aneurism is a pulsating tumour communicating, either directly or indirectly, with the calibre of an artery.

Aneurism, Treatment of.—The cure of aneurism is without the range of domestic medicine, but the following quotation from a medical authority may prove of interest:—"The chief means adopted for the cure of aneurism are the ligature, pressure, and flexion. That by ligature consists in passing a stout hempen cord round the artery, between the aneurism and the heart, so cutting off the current of blood through the main trunk, the circulation being gradually re-established by what is termed *collateral* means; that is to say, the work of the main vessel is thrown upon its smaller branches and, by their dilatation, the blood finds its way into the limb beyond the point of ligature. This method of dealing with the disease is due to John Hunter. Pressure may be exerted upon an aneurism either by mechanical means, such as tourniquets, or by the fingers—*digital* compression. The treatment by flexion consists in flexing, or bending, the limb, such as the leg upon the thigh, or the forearm upon the arm, where the aneurism is situated."

Anger (*Lat.* an'gor, sorrow; from an'go, I press tightly, choke).—The most fatal of all the passions, or violent emotions of the mind, when carried to extravagant bounds, is anger. It has accordingly been termed a short-lived madness, and is frequently fatal by inducing apoplexy. This effect of it is beautifully described by Armstrong when he says:—

But there's a passion whose tempestuous sway
Tears up each virtue planted in the heart,
And shakes to ruin proud philosophy;
For pale and trembling Anger rushes in
With faltering speech and eyes that wildly stare,

Fierce as the tiger, madder than the seas,
Desp'rate, and armed with more than human strength.

But he whom anger stings, drops, if he dies,
At once, and rushes apoplectic down,
Or a fierce fever hurries him to hell,

Anger, therefore, according to its degree, induces different spasmodic and convulsive symptoms, and these occasion various rooted affections in different parts of the body, though chiefly of a temporary character. Irritability of disposition evidently disposes to this passion, and particularly the hysterical and hypochondriacal temperaments, as well as those of dry and rigid constitutions. In the former of these cases, when the passion is moderate, it is frequently beneficial, by increasing the circulation when sluggish; but in the latter constitutions its attack is always dangerous, and every act should be avoided that might tend to produce it. For such persons a mild diluent diet is most proper. All food that stimulates too much should be avoided, and indulgence in a large proportion of sleep should always be favoured. During the fit of anger it should be treated as an inflammatory disease, and the secretion of the bile is chiefly apt to suffer here.

Anger is accompanied by peculiar effects on the body; indeed, these are more marked than in the case of any other mental passion. The arterial blood-vessels become highly excited; the pulse, whilst the paroxysm lasts, is strong and hard; the face is flushed and swollen, the brow wrinkled, the eyes protrude, and the whole body is in a state of commotion. There is also an excessive secretion of bile, which seems to acquire a morbid consistency. This excitement of the organs is succeeded, especially in the case of nervous persons, by a period of depression. Anger is—in most cases at least—highly prejudicial to health. It often gives rise to bile-fever, inflammation of the liver, heart, or brain, and even to mania. These are effects to be looked for immediately after an outbreak of the passion; there are others that come on after a while, as the result of repeated indulgence in anger—for example, nervous fever, paralysis, jaundice, and consumption. The milk of a mother or nurse in a fit of passion may cause convulsions in the infant: it has even been known to act like a strong poison and occasion instant death.

Angina Pectoris, Breast-Pang, or Heart-Stroke (*Lat. angina*, the quinsy; from *ango*, I choke, *pectus*, pectoris, the breast).—This is, fortunately, not a disease of frequent occurrence. It comes on in paroxysms in which there is a struggling for breath, intense pains about the region of the heart, and a terrible sense of impending death. The anguish is extreme whilst it lasts, but it passes off and leaves the patient apparently tolerably well till the next attack. The face is pale, the body covered with sweat, and the sufferer perfectly sensible. The attack does not last long, ordinarily only a minute or two, although sometimes longer. It always recurs, but at no fixed interval, and may come on at any time—night or day—whether the patient be walking about or lying down.

Angina Pectoris, Causes of.—

The cause of these attacks is obscure: generally there is some malady of the heart itself. It may be fatty, or its own particular vessels may be diseased and the circulation through them obstructed; or both may exist.

Angina Pectoris, Treatment of.

—As, after one seizure, another is to be dreaded as likely, during the interval everything ought to be done that will conduce to the patient's health. During the paroxysm stimulants, such as brandy, aromatic spirits of ammonia, ether, and spirits of chloroform ought to be given.

As during the paroxysm of angina pectoris but little can be done, it has been said by Craigie that "whoever is subject to fits of the heart-stroke should studiously shun all occasions of having his feelings roused or his passions warmly interested. If he is prone to anger, he must either endeavour to restrain his passion, or must withdraw from scenes likely to awaken it. If he feels keenly contradiction, disappointment, or insult, he had better avoid all disputes in which he may meet either the one or the other. He must lead a sober, quiet, and temperate life, in which neither

the emotions of the soul are allowed to disturb the functions of the body, nor corporeal affections are allowed to disturb the serenity of the mind."

Animal Heat (*Lat. animal*, a living being, from *anima*, breath, life).—The production of animal heat is a subject on which physiologists are not all agreed. The best writers on the subject, however, are at one in this—that the lungs are the principal laboratory of the system for the production of heat, and that it results from the chemical action of the atmosphere upon the blood; or, to speak more correctly, from the union of the oxygen of the atmosphere with the carbon in the blood. Some, however, maintain, in addition to this, that there is a constant union of oxygen and carbon, and consequent evolution of heat, going on in the minute capillary vessels throughout the system, and which accounts in fact for the change in the colour of the blood from a light red to a purple, or from arterial to venous. This is most likely true. One thing is certain: a union of oxygen and carbon cannot take place anywhere in the system, or in the open air, without producing *combustion*, and consequent *heat*. What we call *fire*, or the burning of coal, wood, or any other combustible substance, is nothing more nor less than the rapid union of the oxygen in the atmosphere with the carbon in the substance burned. The union which takes place in the human system between the oxygen and carbon is not so rapid, not so great, as when it takes place in the open air in the phenomenon of fire; but, so far as it goes, it is precisely the same thing, and produces the same result—that of heat.

The generation of heat in the living system being intimately connected with the lungs, we find the temperature highest in those animals which possess them in the greatest perfection—namely, birds. In many species the internal heat exceeds that of man by twenty or thirty degrees; while that of man exceeds to as great an extent the heat of such of the inferior animals as are

remarkable for imperfect organs of respiration.

An important condition affecting the production of animal heat is the co-operation of the nervous system. If the mind be depressed by grief, tormented by anxiety, or absorbed in sedentary meditation, all the bodily functions become weakened, the circulation languishes, the breathing becomes slow and scarcely perceptible, digestion is ill performed, and coldness of the extremities ensues. If, on the other hand, the mind and nervous system be stimulated by cheerful exertion and agreeable emotions, a pleasant glow pervades the frame, and external cold is much more easily resisted.

The quantity and quality of the food and the state of the digestive functions are also important conditions. The enormous quantity of stimulating animal food, such as fat and oil, required for the support of life under exposure to the intense cold of the Polar regions, is an appropriate example. The proposition will, indeed, be readily assented to when the reader considers that a due supply of well-formed chyle is necessary to restore the nourishing properties of the blood, and that if, in consequence either of insufficient food or of a weak digestion, this be rendered impossible, all the animal functions—among others, the production of heat—must unavoidably be impaired. This is the reason why cold is felt most severely in the morning, before breakfast, and why coldness of the feet and chilliness of the surface are so generally complained of in indigestion and bilious complaints.

The ordinary temperature of an adult when a thermometer is placed in the armpit is 98·4°; in the mouth, 99·5°; the blood is about 100°. In fevers this is much exceeded, and the heat of the patient may rise to 105° or 106°; a higher temperature than this will generally prove fatal, unless it descend soon. The highest temperatures recorded have been in some cases of rheumatic fever, when the body rose to 109° and even to 111°.

Animal Food.—The flesh of animals,

fat and lean together, contains every one of the elements that compose the human system, but not in the same proportion.

The difference in the nutritive properties of five articles of animal food in common use is exhibited in the following table. In one hundred parts are :—

	Mineral Matter, or Food for Brains.	Fibrine and Albumen, or Food for Muscles and Tissues.	Fat or Food for Heat.	Water.
Veal . .	5·0	16·0	16·5	62·5
Beef . .	5·0	15·0	30·0	50·0
Mutton .	3·5	12·5	40·0	44·0
Lamb . .	3·5	11·0	35·0	50·5
Pork . .	1·5	10·0	50·0	38·5

These five principal meats may be classified as follows, the first mentioned under each head standing first, and the last mentioned standing last in importance :—

For heat and fat—pork, mutton, lamb, beef, veal.

For muscle—beef, veal, mutton, lamb, pork.

For brain and nerve—beef, veal, mutton, lamb, pork.

Thus it will be seen that while pork stands highest as a producer of heat and fat, it stands lowest among the brain-feeders, and lowest likewise among the muscle-feeders.

"It appears," says Professor Johnson, in his "Chemistry of Common Life,"—

"First, That the dried flesh of all animals which we most usually consume for food consists essentially of fibrine.

"Second, That the proportion of fat is variable, and that those varieties of animal food are most esteemed for human food in which a considerable proportion of fat is present. Hence,

"Third, Where the proportion of fat is naturally small, we endeavour to increase it by art; as in feeding the capon. Or we eat along with those varieties in which it is small some other food richer in fat. Thus,

we eat bacon with veal, with liver, and with fowl; or we capon the latter, and thus increase its natural fat. We use melted butter with our white fish, or we fry them with fat; while the herring, the salmon, and the eel, are usually both dressed and eaten in their own oil. If the reader will take the trouble of consulting any popular cookery book, he will find that sausage, and other rich mixed meats, are made in

Animal Food, Best Type of.

—One of the best types of animal food is milk. It is supplied by the mothers of all animals belonging to the group of mammals, and is capable of furnishing all the materials of their growth till they are several months or years old. It must therefore contain all substances necessary for the growth of the body and the maintenance of its various functions.



ANIMALCULÆ FOUND IN STAGNANT WATER.

general with one part of fat and two of lean—the proportion in which they exist in a piece of good marbled beef! Art thus unconsciously again imitating nature.”

Animal food is highly favourable to labour, or great corporeal exertion. We can subsist longer upon it without becoming hungry, than upon vegetables, and derive, in most instances, greater strength from it. Where men are exposed to constant toil and exertion, or to extreme cold, they frequently require a more ready, condensed, and substantial nourishment than vegetable aliment can bestow.

Animal Matter, Decomposing, Effluvia from.—See DECOMPOSING ANIMAL MATTER, EFFLUVIA FROM.

Animal Substances, Relative Digestibility of.—See DIGESTIBILITY OF FOODS.

Animaleulæ (*Lat.* *animalculus*, a very small animal).—The name given to very small living organisms or animals, which indeed are so small as to be invisible to the human eye, unless very highly magnified in a powerful microscope. *Id*

the figure on the previous page is a representation of the animalculæ seen in a drop of stagnant water placed in the microscope.

Anise.—A plant yielding aromatic seeds, containing about two per cent. of an essential oil, which is employed for imparting a flavour to cordials.

Ankle (*Gr.* ang'kule, a loop).—The name given to the joint that connects the foot with the leg. The outer point of the joint thus called is formed by the lower end of the *fibula* or small bone of the leg, and the inner point by the lower end of the *tibia* or large bone of the leg.

Ankle, Sprain of the.—The lower extremity is the most frequent seat of sprain of all the limbs, and particularly the ankle joint, and the ridiculous fashion of wearing high-heeled boots, whereby the base of support for the body is diminished, is a frequent cause of the accident. In the slighter sprains of the ankle the ligaments are stretched or perhaps a little lacerated, but in severer ones they are completely torn. Severe sprains are often mistaken for fractures, and should the case be one when from swelling and pain there be any doubt, it should be treated as a fracture, bearing in mind that proper treatment of fracture is the best that could be adopted for a sprain.

The practice of pumping on a sprained ankle or a sprained wrist is very old, and its efficacy, in many cases, very credibly attested. In every fashionable watering-place will be found ingenious modes of applying the douche of either hot or cold, simple or medicated, water, in a full or gentle stream, from a greater or smaller height; and at home all this variety in the mode of this application may be very well attained by a large pitcher, or a watering-pot without its rose. It should be used once a day; the water should be a little warm in winter and cold in summer; but the regulation of temperature, the length

of time, and height from which it should be poured, will be easily ascertained in each particular case, when it is stated that the immediate effect should be somewhat short of numbness and absolute pain; and the speedy result should be that agreeable glow in the part which in general bathing is esteemed the criterion of benefit, when diffused over the whole frame. After every application of the douche, the part should not only be dried, but well rubbed for half an hour or more, and the practice should be continued as long as the benefit which is derived from it is perceptible, or until the strength of the part be fully re-established.

Anodyne Fomentation.—See FOMENTATIONS.

Anodyne Lotion.—See LOTIONS.

Antagonism between Food and Study.—There may be some who think that there is an antagonism between food and study, and that the mind is paralysed by the contact with the gross material aliment. Further, those who are possessed with such notions will in all probability ask, Why not make the practical inference, and reduce the amount of food in order to study better? This proposition, insane as it looks to one who understands the physiological law of our living, is no doubt seriously acted on by many ambitious scholars. To such we would say—though with small hope of being heard—that it is no disgrace to the mind that it is attached to the body. Its Creator has willed it so, and for this life it must be so. To give a body insufficient food, and to exact a full task from the brain, is slow suicide. The nourishment goes to the brain, while the rest of the body grows puny, and the foundation of slow disease, such as consumption, is often laid.

True there have been men and women with whom sedentary habits and a spare diet have agreed perfectly; but with most men and women the result is dyspepsia, melancholy, and a tendency to consumption

or insanity, and as to children or persons under twenty, a sedentary life with spare diet is a pure absurdity.

Antidotes to Poisons. — See POISONS AND ANTIDOTES.

Antiseptics (*Lat. anti*, against; *sepo*, I make putrid).—The name “antiseptics” is given to a class of substances which give stability to organic matters, and prevent their putrefaction or decomposition. Familiar examples of antiseptic agents are salt, used for preserving meat; sugar, used for preserving fruits; vinegar, used in pickling; creasote and the empyreumatic oils of wood, heat, etc., applied in the smoking of meat.

Antispasmodic Draught. — See DRAUGHT.

Anxiety and Fear, Power of.—To illustrate the well-known power of the imagination in bringing on disease, the Arabs tell the following fable:—“One day a traveller met the Plague going into Cairo, and accosted it thus: ‘For what purpose are you entering Cairo?’ ‘To kill 3,000 people,’ rejoined the Plague. Some time after the same traveller met the Plague on its return, and said, ‘But you killed 30,000!’ ‘Nay,’ answered the Plague, ‘I killed but 3,000; the rest died of fright.’”

Speaking of the adverse influences of too much anxiety, Thackeray has said:—“Of the causes of disease, anxiety of mind is one of the most frequent and important. When we walk the streets of large commercial towns, we can scarcely fail to remark the hurried gait and careworn features of the well-dressed passengers. Some young men, indeed, we may see with countenances possessing natural cheerfulness and colour; but these appearances rarely survive the age of manhood. Cuvier closes an eloquent description of animal existence and change with the conclusion that ‘life is a state of force.’ What he

would urge in a physical view, we may more strongly urge in a moral. Civilization has changed our character of mind as well as of body. We live in a state of unnatural excitement; because it is partial, irregular, and excessive. Our muscles waste for want of action; our nervous system is worn out by excess of action. Vital energy is drawn from the operations for which nature designed it, and devoted to operations which it never contemplated.”

Again, Whytt, writing on the nerves, has said:—“Nothing hurts more the nervous system, and particularly the concoctive powers, than fear, grief, or anxiety.”

Further, Sir Thomas Barnard, when expatiating on “The Comforts of Old Age,” has written:—“I shall add to my list, as the eighth deadly sin, that of anxiety of mind; and resolve not to be pining and miserable when I ought to be grateful and happy.”

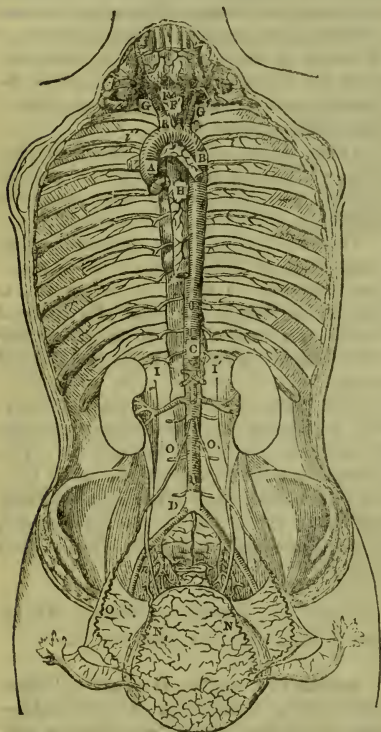
And lastly, Coulton, in “Lacon,” says:—“Anguish of mind has driven thousands to suicide; anguish of body, none. This proves that the health of the mind is of far more consequence to our happiness than the health of the body; both are deserving of much more attention than either of them receive.”

Anxiety, Siesta or Short Sleep good for.—See NAP, OCCASIONAL.

Aorta (*Gr. aor'te*; from *aieiro*, I lift or heave).—The main trunk of the arteries—that called the “aorta”—is directly connected with the top part of the left ventricle. The veins through which the blood returns to the heart gradually end in two large venous trunks—one coming from the head and upper limbs, and the other coming from the lower limbs and the rest of the body. These two large venous pipes become connected with the right auricle by an opening into which one could put two fingers.

A view of the aorta from its commencement to its termination is given in the illustration on the following page: A, B, the arch of the aorta; B, C, the thoracic portion; E,

the innominate artery; F', the left common carotid; G', the left subclavian; F, the right common carotid; G, the right subclavian; H, the œsophagus; C, D, the abdominal



THE AORTA.

aorta, I', I, the right and left intercostal arteries, arising from the back of the aorta; D, the point of bifurcation of the abdominal aorta; O, the spermatic arteries, passing to the ovaries; N, the uterine arteries.

Aperient Pills, Mild.—See PILLS.

Aperient Powders.—See POWDERS.

Apex (Lat. *apex*, highest point or summit).—The names given to the lowest

point of the heart, or thinner end of it.—See HEART.

Aphorisms of Health.—See HEALTH, PROVERBS AND APHORISMS OF.

Aponeurosis (Gr. *aponeurosis*, passage from sinew into tendon; from *apo*, from, neuron, sinew, tendon, or nerve).—A membrane of white and shining appearance, composed of interlacing fibres, generally continuous with muscular fibre; similar in structure to a tendon, but differing from it in being flat in form instead of round.

Aponeurosis, Distortion from Contraction of.—Distortion of the body or parts of it are sometimes caused by contractions, such as those of the fingers, which arise from chronic inflammation and permanent contraction of the palmar aponeurosis, or fascia, a strong inelastic and fibrous membrane attached to the projecting points of bone, and stretched beneath the skin of the palm for the protection of the nerves and other soft parts during the act of forcible grasping. There is a similar aponeurosis in the sole of the foot, which is subject, but not so frequently, to the same shortening.

Apoplexy and Palsy, Difference between (Gr. *apoplexia*, stupor; from *apo*, from, plesso, I strike).—People, somehow or other, are apt to confuse palsy and apoplexy. It may be because the epithets “paralytic” and “apoplectic” are occasionally used to represent the same seizure. It should be understood, however, that the term “palsy,” or “paralysis,” represents the more permanent loss of motion and sensation, and “apoplexy” the fit which precedes it. This may, at all events, be said as to the relation of the two to each other: in the great majority of instances, a person who recovers from a real attack of apoplexy finds himself *palsied* on one side of the body.

Apoplexy, Causes of.—The most common immediate cause of apoplexy is

pressure on the brain, either from an effusion of blood or serum, or from a distention of the vessels of the brain, by an accumulation of blood in them, independently of effusion.

Whatever operates in determining a great quantity of blood to the head, or in impeding a free return of it, may produce excessive distention or effusion within the cranium, and be, therefore, reckoned as exciting causes; such as violent passions of the mind, immoderate exercise, intense study, fits of intemperance, excessive straining, ligatures about the neck, the suppression of accustomed evacuations, as piles, and in unrestrained indulgence of the appetites, and exposure to sudden great heat or excessive cold.

This disease may happen at any age, but is most frequent about the middle or in the decline of life, especially in persons of a plethoric habit, who have short, thick necks, and who are indolent, and indulge much in eating and drinking.

"The most perfect impediment to the use of the body, short of death, is that of apoplectic sleep; but even in it we have reason to believe that the mind is often busy in dreaming. Some patients who appeared perfectly apoplectic have remembered their dreams; and I have heard an individual, during a severe fit, continue to mutter earnestly about circumstances in which he had been previously interested, and of which, on recovery, he had no recollection. Of course, it cannot be proved that the mind is active during what presents itself to our observation as perfect unconsciousness; yet, when all connection with the external world seems suspended, as by pressure of the brain, it is sometimes possible, by shouting in the ear, to rouse the patient to give a distinct reply. In short, we possess proof that a perceiving power continues in possession of the body as long as its organs are in a state to put it in relation to things around it. To the question, Why are we subject to unconsciousness? we may, therefore, safely reply, that it is the merciful interposition of Omnipotence for the protection of His intelligent creatures from the terrors of the

transition from one state to another. Thus death, the penalty of guilt, is seen only by fear; and these are all destroyed by reliance on the faithfulness of our Creator."—DR. MOORE.

Apoplexy, Symptoms of.—In apoplexy a person, apparently in good health, is seized suddenly, perhaps in his bed, unconsciously, whilst asleep; or he falls suddenly back when sitting in his chair, not unfrequently whilst at his meals, or soon after his dinner; or he falls as suddenly to the ground when walking or riding, in a state of perfect insensibility: if not instantly deprived of life, which is sometimes the case, he lies motionless and powerless, with stertorus, or noisy, breathing, sometimes with eyes partly closed, but oftener staring or protruding, and his face and neck livid and swollen.

This state is distinguishable from epilepsy by the absence of convulsions and contortions of the body, by a full and slow state of the pulse, and the noisy breathing. The patient is insensible to noises, incapable of motion, and the pupil of the eyes, which is usually much dilated, does not contract when exposed suddenly to a very strong light. The condition of the patient very much resembles the temporary annihilation of sense and motion in beastly intoxication, from which, indeed, it is sometimes very difficult to distinguish it, when information on this point is not attainable from his companions. It may, however, here be observed that the pulse in a drunken man is often quick, and never preternaturally slow; and that the smell of the breath, and the nature of the matter brought off the stomach—for sickness usually attends this state of intoxication—will often detect the cause of his insensibility. Let it, however, be remembered that when intoxication proves fatal, it is often by inducing apoplexy.

A patient generally has some warning before a fit comes on: headache, sickness, and giddiness coming on in advanced life are threatening symptoms; or there may be double vision, or squint, or numbness of a

limb, and the familiar sensation of pins and needles; in other cases, loss of memory and mistaken use of words are signs of the coming attack.

The duration of a fit of apoplexy is various; but it generally lasts from eight to twenty-four hours, and occasionally to thirty-six hours, or even longer.

There are two varieties of apoplexy, which are in general clearly marked, the one attended by a hard, full pulse, flushed countenance, and stertorous breathing; the other by a feeble pulse and pale countenance. The former usually occurs in persons of a full plethoric habit, and considerable energy and strength; the latter, for the most part, in the old, phlegmatic and feeble.

Generally speaking, the latter form of the disease is the most dangerous, since, from the general failure of the energies of life, nature has less ability to assist us in the use of our remedial measures. In any other point of view, the degree of danger will be generally measured by the violence of the symptoms. In general, the shorter the fit, the more favourable the prognosis.

It is very doubtful whether the sudden deaths we so frequently hear of, ought to be ascribed, as is common, to apoplectic seizure, since genuine apoplexy very seldom destroys life in less than two hours. They appear to depend rather upon some violent affection of the heart or stomach, or upon the rupture of some blood-vessel larger than those of the brain.

Apoplexy, Treatment of.—The treatment of this disease must obviously vary with the pathological condition of the brain, on which it depends. The skill of the physician consists in detecting what that pathological condition is, and in exactly adapting his remedies to it, which must differ widely according as he is called to treat a threatening or an actual paroxysm, or to prescribe for a patient subsequent to an attack.

To enter into a discussion of the different remedies suited to the manifold states of the brain and of the system in the various forms

and stages of this malady, would require a larger space than can be allotted to it in this work. There are not many parts of his science in which the physician is required to make such nice and difficult distinctions, and in which life so completely depends on the accuracy of his discrimination. At one time the vital energy of the brain is so far exhausted as of itself to threaten the total abolition of its functions; at another time the arterial action of the venous congestion is so great as to threaten an immediate effusion of serum, or a large extravasation of blood. For states so opposite, opposite remedies must, of course, be required; but the difficulty at all times is to interpret the outward signs aright. If together with the ordinary symptoms of drowsiness, giddiness, headache, and so on, there be a flushed countenance, a dull or suffused eye, a hot skin, a strong or full pulse, the abstraction of blood may be indispensable to the preservation of life; but if, on the other hand, the countenance be pallid and sunk, the pulse full, and the skin cool, the smallest blood-letting may utterly exhaust the vital energies of a brain already greatly depressed, and the only chance of averting death may be the judicious employment of stimulating remedies.

It is in clearly pointing out distinctions like these, and in guiding to the selection of the remedies appropriate to each, that science is the salvation of life. But such, too, are precisely the cases in which no skill on the part of the physician can succeed without the steady co-operation of the patient. The physician, duly weighing the premonitory signs, may foresee the impending danger and give warning of it, and precisely prescribe the medicine and regimen fitted to avert it; but if these be either altogether neglected, or only partially followed, the disease will hold on its course, and life be lost. And this loss of life is deplorably frequent from the neglect on the part of the patient of the appropriate remedies in the primary stage of the disease, when such remedies may be employed with almost certain success; and the same is true

from the neglect of such remedies in the stage subsequent to an apoplectic paroxysm, although in this stage the best concerted measures have a much less chance of securing their object.

For the same reason that it would be vain to attempt here to enter into the modification of treatment required in the premonitory and the consecutive stages of the disease, it would be out of place to discuss the measures proper to be adopted in the paroxysm itself. The state, both of the brain and of the system, varies in every individual case, and safe, not to say successful, treatment must in every case be modified accordingly. It is only necessary to add here that whenever a person is seized in a fit of apoplexy, he should be carried into a large room, the freest possible circulation of fresh air should be promoted around the body, which should be placed in the horizontal position, with the head, however, considerably raised. All bandages should be taken from about the head and neck—and especially from about the neck,—and a medical man should be sent for instantly. Every observer of such a case should bear in mind that the loss of life may be the consequence of the loss of a minute. In cases of sudden seizure, as of apoplexy, epilepsy, convulsions, or fainting, speedy assistance is of the first importance. Some judgment is required to distinguish the nature of the attack, and long before a medical attendant can arrive upon the spot the patient may be saved or lost.

Apparatus, Human Vocal.—See HUMAN VOCAL APPARATUS.

Appetite and Exercise.—Inclination for food is largely increased by exercise, especially the disposition to eat meat and fatty articles of food in general. On the other hand, deficient exercise leads to the avoidance of meats and fat, with partial neglect of even starchy and saccharine diet, which substances are absolutely necessary to the proper maintenance of the human frame.

Appetite, Failure of, Homœopathic Treatment of.—For loss of

appetite, accompanied by constipation of the bowels, pain in the stomach, especially a feeling of fullness at the pit of the stomach after eating, with broken and unrefreshing sleep, *Nux vomica* is needed, which may be taken in alternation with *Sulphur* in doses of one drop of the tinctures in a tablespoonful of water every three hours.

Apple.—The apple is one of the most common fruits brought to the table in England. Apples contain malic acid, which gives them their acid flavour, and a varying quantity of sugar, pectin, cellulose, and salts. The apple is an agreeable fruit, and is made very wholesome by baking or boiling. Only the sweeter and softer apples should be eaten raw. Before eating it is advisable to take off the peel and remove the core, as those parts are less digestible. In cooking, the peel should be removed, and sugar added. If roasted, the peel should be allowed to remain on. Apples, like other vegetable products, contain saline matters which act beneficially on the system. The fermented liquor called cider (see CIDER) is made from the expressed juice of apples.

The following is the analysis of apples:—

	In 100 parts.		In 1 lb. oz. gr.
Water	83.0	.	13 122
Albumen	0.4	.	0 28
Sugar	6.8	.	1 39
Malic acid	1.0	.	0 70
Pectose, pectin, and gum	5.2	.	0 364
Cellulose	3.2	.	0 224
Mineral matter	0.4	.	0 28

Applications, Cold.—See COLD APPLICATIONS.

Applications, Hot.—See HOT APPLICATIONS.

Apricots.—The apricot, like the cherry and peach, was first brought from Asia to Rome, and thence spread over Europe; it is a sweeter, richer, and less noxious fruit than either of the former. Apricots should

be fully ripe before being used, in which state they are less apt to produce fermentation; and being of a cooling, antiseptic nature, they may be more indulged in than the other kinds. Preserved apricots are highly nourishing, but are less digestible than fresh ones.

Arachnoid Membrane (*Gr. arachne, a spider*). A fine, semi-transparent web, which is spread over the entire surface of the brain, bearing some resemblance to a spider's web, for which reason it has obtained its peculiar distinctive name; the termination *oid* denoting likeness or similarity.

Arm Bone.—See HUMERUS.

Arm, Fracture of the.—In the case of a broken arm, the injured limb should first be withdrawn from the coat-sleeve, the sleeve itself being gently drawn off the broken limb, unless it is found that the attempt causes the patient great pain; in this case it should be at once opened up the seam. The shirt sleeve should always be opened, and in some cases it is desirable to open the side-seam of the shirt as well, both for the convenience of the surgeon, and in order to facilitate the changing of the shirt when necessary.

Fig. 1.—Method of treating fraction of the olecranon process of the ulna. A splint is placed in front of the elbow joint and fixed by a bandage. The arm is thus kept in an extended position and the broken surfaces are approximated to one another.

Fig. 2.—Fracture of the humerus above the condyles. The lower fragment is drawn upwards and backwards by the action of the brachialis anticus, the biceps, and the triceps muscles.

Fig. 3.—Represents a fracture of the lower end of the radius before reduction, and needs no further explanation.

Fig. 4.—Angular arm splint for the treatment of fracture of the shaft of the humerus.

Fig. 5.—Splints used in the treatment of fracture of the shaft of the humerus.

There is an inner short splint, an outer long, and one for the arm.

Fig. 6.—The upper limb in its articulation with the shoulder blade looked at from before: *a*, the subscapular fossa; *b*, the acromion process of the scapula; *c*, the superior articular surface of the humerus in articulation with the glenoid cavity of the scapula; *d*, the shaft or body; *e*, the inferior extremity of the humerus articulating

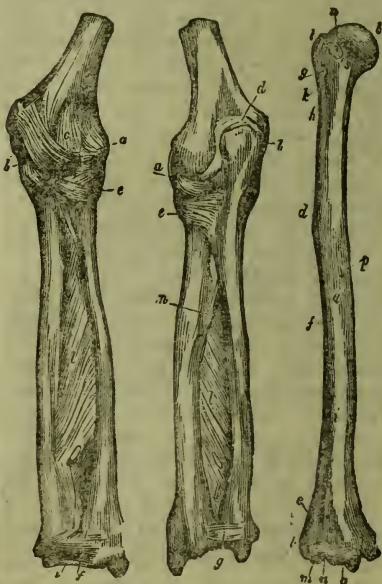


FIG. 7.—BONES OF FOREARM. FIG. 8.—BONES OF FOREARM. FIG. 9.—RIGHT HUMERUS.

with the bones of the forearm; *f*, the ulna or inner of the two bones of the forearm; *g*, the radius or outer of the two bones; *h*, the carpus or wrist; *i*, the metacarpus; *k*, the fingers.

Fig. 7.—The articulations of the bones of the forearm seen from before: *a*, the external lateral ligament; *b*, the internal lateral ligament; *c*, the anterior ligament; *e*, the orbicular ligament of the radius; *f*, the anterior ligament of the inferior radio-

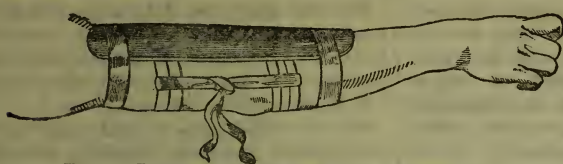


FIG. 1.—FRACTURE OF THE ARM.

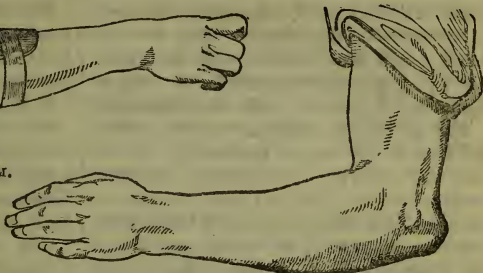


FIG. 2.—FRACTURE OF THE HUMERUS.

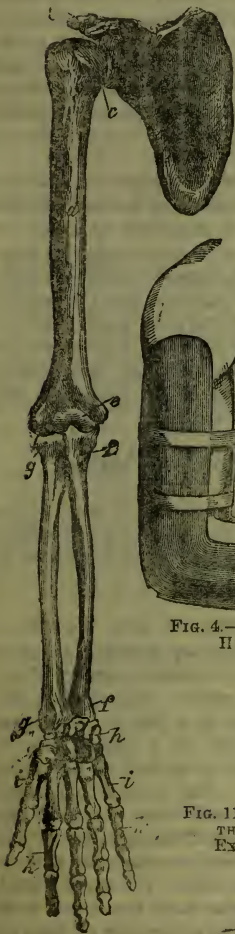


FIG. 3.—FRACTURE OF
LOWER END OF RADIUS.

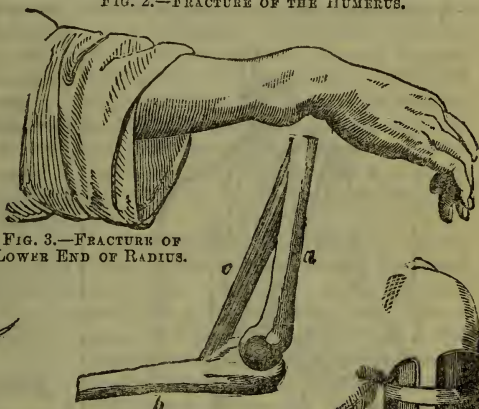


FIG. 4.—FRACTURE OF
HUMERUS.

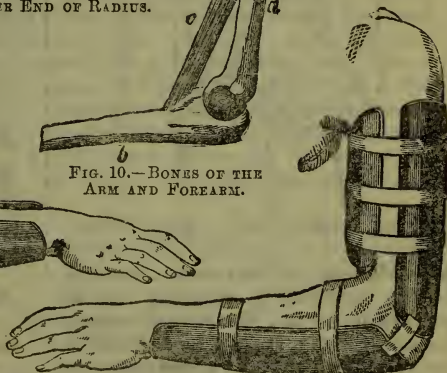


FIG. 5.—FRACTURE OF HUMERUS.

FIG. 11.—BONES OF
THE UPPER
EXTREMITY.

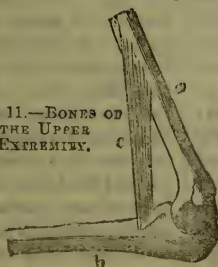


FIG. 12.—BONES OF THE
UPPER EXTREMITY.

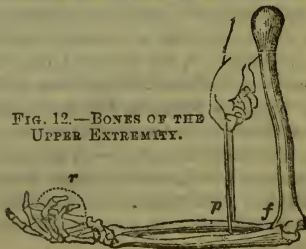


FIG. 6.
THE UPPER LIMB.

ulnar articulation; *i*, triangular cartilage; *l*, interosseous membrane. Fig. 8.—The same viewed from behind: *a*, *b*, and *c* as in fig. 7; *d*, posterior ligament; *n*, oblique ligament; *g*, posterior radio-ulnar ligament.

Fig. 9.—Right humerus looked at from before: *a*, the lesser tuberosity; *b*, the articular head; *c*, the inferior articular surface; *d*, the V-shaped mark for the insertion of the deltoid muscle; *e*, the inferior articular surface; *f*, the spiral groove; *g*, the bicipital groove; *k*, the surgical neck; *h—l*, the external and internal ridge of the



LARGE SLING FOR ARM.

bicipital groove; *t*, the greater tuberosity; *m*, the capitellum, or smaller of the two surfaces into which the inferior articular extremity of the humerus is divided. It articulates with the head of the radius; *n*, the furrow separating the capitellum from the trochlea or larger articulating surface; *e*, the trochlea for articulating with the head of the ulna; *o*, the coronoid depression for receiving the coronoid process of the ulna; *p*, nutritive foramen for the passage of a vessel into the interior of the bone to supply it with nourishment; *p—r*, internal edge of humerus; *d—l*, external edge; *h—i*, anterior edge; *s*, anatomical neck; *l*, external supracondyloid eminence; *r*, internal supracondyloid eminence.

Fig. 10.—The bones of the arm and forearm viewed laterally, with the coracobrachialis muscle attached and in a state of relaxation; *a*, the humerus; *b*, the ulna; *c*, the coraco-brachialis muscle.

Fig. 11.—The bones of the upper extremity with the coraco-brachialis muscle attached, showing its action: *a*, the humerus; *b*, the ulna; *c*, the coraco-brachialis muscle in a state of contraction.

Fig. 12.—This figure is intended to represent the most common form of lever met with in the human body, viz., a lever of the third order. In this form of lever the power *p* acts between the fulcrum *f* and the resistance *r*.

If the arm be broken above the elbow, the recumbent position will be the easiest, with the fractured part supported by a pillow; if below the elbow, a sling made of a large silk handkerchief, suspended round the neck, will best support the arm, and the patient may remain sitting up; the sling should be sufficiently broad to extend from above the elbow to below the wrist, and care must be taken that the hand be not allowed to fall below the level of the wrist.

Arnica Lotion.—See LOTIONS.

Arrack.—Arrack is obtained from fermented rice. It is an exceedingly strong and ardent spirit which is manufactured in the East.

Arrangement of the Teeth.—

The teeth in man are arranged in close contact, without intervening spaces, affording each other mutual support after the manner of staves in a barrel. Being set without interspaces on a curved line, it follows that their outer surfaces are wider than their inner. The upper arch is larger than the lower, and from this fact the incisors and cuspids of the upper jaw, when the mouth is closed, overhang or shut in front of the lower teeth. The upper central incisors are broader than the lower, thus causing the teeth on either side of them to be thrown out of exact correspondence with

those of the lower jaw occupying the same relative positions. This brings about an irregularity of opposition, so that each tooth, instead of being antagonised by a single tooth, is met by portions of the surfaces of two teeth. Further back in the arch the difference is harmonized by an increase in the size of the molars of the lower jaw beyond that of the upper, which brings the arches out even. The irregularity of opposition of the upper and lower sets is a valuable feature, as when a tooth is lost from the arch in either jaw, the opposing tooth is not rendered useless, as it would be if the teeth were in perfect opposition with one another, because it is brought at least partially into contact, during mastication, with the tooth which adjoins the missing one.

Arrowroot.—The fine starchy farina known under the name of arrowroot is obtained from the roots of certain plants growing in tropical countries. It is much valued as a delicate and easily digestible food for invalids and children. But it should always be kept in mind that arrowroot is not very nourishing. "As a vehicle for wine," says Miss Florence Nightingale, "and as a restorative quickly prepared, it is all very well. But it is nothing but starch and water. Flour is both more nutritive and less liable to ferment, and is preferable wherever it can be used."

One hundred parts of arrowroot contain:—

Starch fecula, or arrowroot	26
Woody fibre	6
Albumen.	1½
Gummy extract, volatile oil, and salts	1
Water	65½

West-Indian arrowroot is the best. The most highly esteemed in the market is grown in Bermuda; the next, almost as good, is imported from Jamaica. The East Indian is not usually so much thought of. In commerce arrowroot is often adulterated with rice or wheat flour, and still oftener

M. D

with potato starch. Refined sago-flour is also sometimes mixed with it. In buying arrowroot, one should see that it be fresh, and free from the musty smell or taste it frequently acquires by being imported in insufficient packages, wetted with sea-water, or stored in a damp place. Arrowroot may be prepared for invalids in various ways.

Arrowroot Blancmange.—Take three tablespoonfuls of arrowroot, and make into a mucilage with water, then add milk in sufficient quantity, and boil till it is of a proper consistence. Pour into a shape, and allow it to cool and set. It may be eaten with currant jelly or with lemon-juice and sugar. Milk or beef-tea may be used instead of water in the preparation of arrowroot mucilage. It should be boiled for twenty minutes. This forms a very nice light article of diet for early convalescence.

Arrowroot Mucilage.—Take a tablespoonful of West Indian arrowroot, mix it with a little cold water, and then pour about a pint of boiling water over it gradually, constantly stirring till it is of a pleasant consistence. Boil for five minutes, sweeten with a lump of sugar, and grate a little nutmeg on the top. Instead of nutmeg, a little lemon-juice may be added.

Arrowroot Pudding.—Rub a tablespoonful of arrowroot in a basin with a little cold water, and add to it, stirring constantly, a pint of boiling milk. With this mix the contents of one egg and three tablespoonfuls of powdered, refined sugar, which have previously been beaten up together. Boil in a basin, or bake. This forms a very good pudding for the early stage of convalescence.

Arsenic, Detection of (*Gr. arsen'icon; from ar'sen, male, strong*).—The means of detecting arsenic are various, but the following are most easy of application:—Throw some of the suspected matter in a dry state upon red-hot iron, and if arsenic be present you will perceive an

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odour strongly resembling that of garlic. Draw a broad stroke upon white paper with the suspected matter in a fluid state, then draw a stick of lunar caustic over the moistened paper several times, and, if arsenic be present, the streak will assume a rough, curdy and yellow appearance, which after a time becomes brown.

Arsenic, Symptoms of Poisoning by.—The symptoms produced by arsenic taken into the stomach are constriction of the throat, burning pain in the stomach and bowels, vomiting, and frequently purging, both evacuations being often bloody. The breathing also becomes difficult, the pulse small, hard, and quick, and the thirst incessant, the extremities are cold, and death is usually preceded by convulsions. Persons recovering from an overdose of arsenic are sometimes left paralytic, and often with chronic inflammation of stomach and bowels.

Arsenic, Treatment for Poisoning by.—No antidote to this poison has yet been discovered. The treatment consists in giving large quantities of sugar and water or linseed tea, with a view of promoting the vomiting, which is already present, and of sheathing the coats of the stomach; and then in freely and frequently washing out the stomach with the same mucilaginous fluids, by means of the stomach pump. If the violent symptoms are subdued—which only takes place, however, when the quantity of arsenic has been small—broth and other light diet may be given. The pains in the stomach and bowels which remain call for the free application of leeches, and other treatment applicable to inflammation of these parts.

Arsenical Wall Papers.—See WALL PAPERS, POISONOUS.

Arteries (*Gr.* *artēria*; from *aēr*, air, *tereo*, I keep).—The tissues and different organs of the body are constantly in need

of blood, and there is a special apparatus by means of which it is supplied to them. In the chest there is a powerful forcing-pump, called the *heart*, from which pipes proceed to all parts of the body, and there is another set of pipes which bring back the blood from all parts of the body to the heart again. The pipes which take the blood from the heart are known as *arteries*, and those which bring it back are called *veins*.

The arteries are so called because they were supposed, a long time ago, to contain nothing but air. Their structure is very wonderful. Each artery has three coats. They are not made throughout of some one substance, as a waterpipe is, but they are made up of different materials woven together. The external coat is very elastic; another, the middle one, contractile. The thin or internal coat of the artery is also an elastic coat, and it lies within the muscular or middle coat. Its inner surface is lined with a layer of beautiful but very small plates, called endothelial cells, which allow the blood to flow over them as smoothly as if they were polished tiles.

How, it may be asked, do the arteries end, and what becomes of them? It is only by the aid of the microscope that this question can be answered. The main arterial tubes, or pipes, which convey blood from the heart, divide and continue to give off branches, or smaller pipes, until they become so small that we can hardly see them. All parts of the body, except the cuticle of the skin, the hair, the teeth, and the cartilages which cover the ends of bones, are pierced through and through by small arteries which are characterised by possessing the three coats just described. These minute arteries terminate in still smaller pipes or tubes, called *capillaries*. These capillaries, or hair-like tubes, are so numerous that it is impossible to prick oneself with a needle without rupturing some of them. (See CAPILLARIES.)

Arteries of the Arm.—The arteries of the arm are shown in the accompanying illustration: *a*, *a'*, the axillary artery; *a*, the acromial thoracic branch of the axillary

artery; *b*, thoracic branches of the acromial thoracic artery; *c*, the acromial branches; *d*, the deltoid muscle; *e*, the long thoracic



THE ARTERIES OF THE ARM.

artery; *f*, the subscapular artery; *g*, its thoracic branches; *i*, the dorsalis scapulæ branch; *l*, the posterior, and *n*, the anterior

circumflex arteries; *a'*, *h*, the brachial artery; *k*, its superior profunda branch; *m*, its inferior profunda branch; *o*, the anastomotica magna; *h*, the bicipital fascia; *p*, the radial artery; *g*, the ulnar artery; *s*, the superficialis volæ branch of the radial artery; *t*, the superficial palmar arch formed by the ulnar artery along with the superficialis volæ branch of the radial; *y*, the anterior interosseous arteries; *v*, the princeps pollicis; *w*, the radialis indicis; *u*, the digital branches.

Artery, Pulmonary.—See PULMONARY ARTERY.

Artery, Wounded.—See WOUNDS.

Artichoke.—Artichoke is the name of two plants which are used as articles of diet. The common artichoke is the *Cynara Scolymus* of botanists, and the bracts on the outside parts of the unopened flower of this plant are boiled and eaten with melted butter.



GLOBE ARTICHOKE.

They contain starch, sugar, and albumen, but no medicinal properties. The Jerusalem artichoke is produced by a species of sunflower, and the word Jerusalem is a corruption of Girasole or Turn-sun. The part of the plant eaten are the tubers, which are cooked like potatoes. They contain more sugar and less starch than potatoes, and are even less nutritious.

Articulation.—See JOINT.

Artificial Disinfectants.—See DISINFECTANTS, ARTIFICIAL.

Artificial Flower-making,
Danger of.—Artificial-flower makers are exposed to the poison of arsenite of copper, or the arsenite and acetate of copper—Scheele's and Schweinfürth green; they inhale it and receive it by contact with the skin. The effects are, characteristically, enfeeblement of the muscular force, especially of the limbs, also a loss of appetite, palpitation, pains in the stomach, diarrhœa, and constant headache.

Artificial Fruit Essences.—See FRUIT ESSENCES, ARTIFICIAL.

Ascites.—See DROPSY.

Asiatic Cholera (*Gr. chol'è, bile*).—Cholera, as known to us, is of two kinds—what is known as British cholera, a disease bad enough, but not particularly fatal; and that terribly fatal disorder, Asiatic, malignant, or epidemic cholera. This last disease seems to have been known in India for centuries, and to have its natural home or headquarters in the Delta of the Ganges. In 1817, the disease first attacked Europeans in India, and ravaged Lord Hastings' army; but it was not till 1831 that it reached England. In this country the disease has almost invariably prevailed in its worst form in poor, crowded dwellings, among those whose food supply was bad, whose hygienic conditions were otherwise unfavourable, but especially among those who had a tainted supply of water.

He who would avoid cholera, during a cholera season, ought to live by rule and method. First, see that his water-closets are in good order, and that every precaution is taken in cleansing and disinfecting them—Calvert's carbolic acid powder, or the diluted acid itself, is best for the purpose; see that the house is clean, sweet, and airy; let no foul and decaying matter of whatever kind remain on the premises; see that the water supply is pure; let no stale meat or vegetables, no sausages, game, or substances likely to create digestive disturbances be used; especially avoid unripe fruits, pro-

longed abstinence from food, excessive fatigue. The astringents to be used should not be powerful; chalk mixture, sulphuric acid, lemonade, or those with a little opium added, are best. *No diarrhœa in cholera time is to be neglected.*

Asiatic Cholera, Symptoms of.
 —The following are the symptoms of Asiatic cholera:—After diarrhœa, or sometimes no premonitory symptoms having occurred, sudden vomiting of the contents of the stomach without nausea, and sudden purging without pain; and vomiting and purging frequently recurring, the liquid discharged being like rice-water or gruel. With this, spasms of the muscles of the extremities and belly. In a short time, from one to three or four hours, collapse supervenes; urine is not secreted; the pulse is extinguished; the eyes are sunk; the eyelids are surrounded by a dark circle; the voice is hardly audible; the tongue is cold; the skin cold and passively shrunk, with a dirty look, or livid and blueish, particularly on the extremities; cramps of the limbs constant; the vomiting and purging cease, and life. It is probable that, in its worst forms, the appalling antithesis which Magendie used in describing Asiatic cholera conveys no exaggeration: "It begins," said he, "where other diseases end—in death."

Asiatic Cholera, Treatment of.
 —It is quite useless to give medicines internally; they only accumulate there, for they are not absorbed. The only thing is to try to keep up the heat in every way which will not *disturb* or *fatigue* the patient—that is material. The patient is consumed with thirst, and there is no reason under the sun for refusing him drink, if of a wholesome kind. Should reaction occur, he must be kept quiet. If his head trouble him, and his face is flushed, apply cold water to it. If there is much sickness, let him have a little ice or ice-water. If his lungs get gorged, warm poultices or turpentine stupes will be best. But the great anxiety is the kidneys. If they do not act, warmth must be tried, per-

haps as a warm bath; but this is a delicate matter, and requires caution. If they are acting well, and a patient requires a stimulant, let him have some sal volatile. The food given is of special importance; broths, soups, and jellies may be given, but certainly not meat. Small quantities, too, at a time may be given, and repeated as frequently as necessary.

Asparagus.—This is a wild, sea-side English plant, made more succulent by cultivation. It contains a crystalline alkaloid, *asparagine*, which is credited with diuretic properties. Asparagus is quickly dissolved in the stomach, and, when sufficiently boiled, is not disposed to create flatulence or acidity: along with its mucilage it frequently contains some sweetness, which affords a proof of its nutritive quality. Asparagus is only wholesome when in an intermediate state, between root and plant. When older than this, it is remarkably acid.

Ass's Milk has a very strong resemblance to human milk; it has nearly the same colour, smell, and consistence. When left at rest for a sufficient time, a cream forms upon its surface. This cream, by very long agitation, yields a butter, which is always soft, white, and tasteless, and what is singular, it very readily mixes again with the buttermilk. But it may be again separated by agitation, while the vessel that contains it is plunged into cold water.

Creamed ass's milk is thin, and has an agreeable, sweetish taste; ass's milk therefore differs from cow's milk in three leading particulars: in its cream being less abundant and more insipid, in its containing less curd, and in its possessing a greater proportion of sugar.

Asthma (*Gr.* *asth'ma*, short-drawn breath; from *ao*, I blow, or breathe hard).—Asthma is usually a disease of middle age, unless it be, as now and then is the case, connected with, and dependent upon, original malformation of the heart, or an unnatural conformation of the chest, in which case it

usually makes its first appearance in childhood.

During the intervals of attack the patient may be tolerably well, but may be said to be a valetudinarian. The disease may attack the individual in apparently the most healthy situations, and leave him alone in smoky, apparently unhealthy, quarters. As a rule, London suits asthmatics, but not, by any means, all.

Not unfrequently asthma is hereditary, and commonly sets in about middle life. Asthma seldom destroys life, however bad the patient may seem in the fit. Many who are subjects of asthma live a good long life, the reason probably being that they are forced to take care of themselves. Generally, however, the disease induces other conditions, especially of heart and lung, which, indirectly, prove fatal.

Asthma, Cure for.—"Asthma," says an American writer, "is one of those diseases for which there are many remedies prescribed, though but few of them are effectual, except as palliatives. A quaint writer remarks that for two dollars you can get in the drug-stores a box of stuff that you can burn up in three nights, and very certainly relieve asthmatic paroxysms; but an ounce of pulverised stramonium, with two drachms of powdered saltpetre, will do the same thing six times, and cost nine cents.

"Dr. Finley, of Pittsburgh, is accredited with having cured many cases of asthma; and he has made public his prescription, which is as follows:—

"Oil of tar, one ounce; tincture of veratrum viride, two drachms; simple syrup, two drachms; mix. Dose—For adults, fifteen drops three or four times daily."

Asthma, Symptoms of.—Asthma, whether connected with malformation or not, is a hurried, oppressed, and noisy state of the breathing, coming on in paroxysms, and leaving the patient quite well in the intervals in many cases; whilst in others there may be observed at all times an im-

perfect state of respiration, namely, a little thickness or wheezing, and a more confined dilatation of the chest than is natural in inspiration. An asthmatic attack, or a fit of asthma as it is called, usually, however, consists of two, or three, or more aggravated paroxysms of difficult breathing, coming on for as many successive nights, with alleviation during the daytime, but not a perfect freedom of respiration till the expiration of three or four days, after which the patient may remain free from another attack for many weeks or many months.

A peculiar state of the atmosphere is a frequent exciting cause of an asthmatic attack; damp foggy weather will induce it in some, a north-east wind in others; some asthmatics are liable to an attack when spending only a single night in London, or other large towns, whilst some few are more exempt from attacks under these circumstances than when in the country. Particular odours will excite a paroxysm in some, and exposure to the dust in certain manufactories, as feather-dressers, file-makers, and others, will bring it on in most persons who are pre-disposed to it. A single indigestible meal, and particularly a hearty supper, is another frequent exciting cause; and such as are habitually inattentive to the quality and quantity of what they eat and drink, have the most frequent and most severe attacks. But the most common exciting causes, after all, are just such as would induce in other persons an ordinary cold, as exposure to cold or damp in any form. The breathing, when asthma comes on, is so distressing as to make the patient sit up in his bed, change his posture again and again, release himself from bed-clothes, or anything that is tight across his chest, withdraw the curtains, or rise and walk about the room and seek an open window, or perhaps the open air. The wheezing is attended with successional coughing, and at length the expectoration of some viscid phlegm greatly relieves the patient; he breathes tolerably easy for a while, and after a little more coughing and expectoration the paroxysm ends.

Asthma, Treatment of.—The grand rule to be observed in asthma is to avoid everything likely to set up the attack, particularly prejudicial articles of food. If the attack has been brought on by an injudicious meal, let the stomach be emptied. During the paroxysm, a few whiffs from a pipe of tobacco or stramonium will frequently act as a charm. *Datura* inhaled is also a powerful remedy. For many chloroform or ether is best, but requires careful management, whilst in others a draught of hot brandy-and-water, or strong coffee, is best. In the interval the health of the patient should be carefully attended to, iodide of potassium and arsenic being among the most approved remedies to be then given, of course under medical supervision.

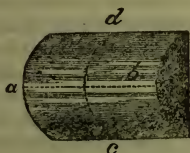
In the long intervals between the paroxysms a tonic plan has been recommended, as small doses of steel and bark, or a course of chalybeate waters; and by others much stress is laid upon the continued use of small doses of ipecacuanha in vinegar; but this part of the treatment must be left to the judgment of the medical practitioner. Any great change in the habits and mode of life, as well as in the locality of the patient's residence, has been found to lessen, if not to obliterate the disease; and we should always recommend to persons of sedentary employment to adopt, if possible, a more active mode of life. Where the patient can make a change of residence too, we would advise as great a contrast as possible; thus the fenman should emigrate to a high country, and *vice versa*; the countryman should seek the city, and the citizen the country; and a further change of clime by travelling abroad may be reasonably tried as an experiment, where it can be easily effected.

Astigmatism (*Gr. a*, not, *stig'ma*, mark or spot).—This is an optical condition of the eye in which, for want of uniformity in the curvature of the cornea, different meridians have a different focus. Astigmatic persons, in reading, require different degrees of focussing for the horizontal and the ver-

tical lines of the letters, and the distress that results from this continued and irregular strain of the muscle of accommodation may be readily understood. They usually attribute their defective vision to short sight, but are disappointed in their efforts to correct it by short-sight glasses. The surfaces of these glasses are spherical, and if they correct one meridian of an astigmatic eye, they cannot correct the other, but may make it worse.

Astigmatism, Correction of.—

What is needed, in simple astigmatism, is a glass that will correct one meridian without affecting the other; and in compound or mixed astigmatism, a glass with two curved surfaces, one adapted to each meridian. Such a glass is found in the section of a cylin-



CYLINDRICAL LENS.

der, instead of the section of a sphere. The accompanying illustration represents a cylindrical glass, and it will be seen that rays of light passing through its axis, *a b*, meet with no curve, and are, therefore, not refracted; while in the direction of right angles to the axis, *c d*, it is strongly convex. This glass is cut into the usual oval form, and is set in the spectacle-frame with its axis corresponding to the direction of the correct curvature of the cornea. In this way we are able to place the proper convex or concave lens before one meridian of the cornea, and, at the same time, only a plain glass before the opposite meridian; or, if necessary, to correct each meridian separately by the appropriate curvature on each side of the glass.

Astringent Eye-Wash.—See EYE-WASHES.

Astringent Powder.—See POWDERS.

Athletic Exercises, Brain and.
—See BRAIN AND ATHLETIC EXERCISES.

Athletic Training, Diet in (*Gr. athl'etes*, a wrestler).—In athletic training the object is to reduce the fat, increase the size and hardness of the muscles and the power of endurance.

Trainers have experimented with a variety of systems of diet in order to see what was best adapted to co-operate with severe muscular exercise and regular habits to secure their end. It has been found that the best fare for athletics of all kinds—gymnasts, oarsmen, etc., during training, contains the following articles:—

Lean and rare beef or mutton.

Stale flour bread.

Potatoes and other vegetables in moderate quantities.

Tea, coffee, and beer or wine in very moderate quantities.

This diet-table, it will be observed, contains little or no fat, and little starch or sugar, and therefore is not calculated to feed the fatty tissue. Its leading element is *nitrogen*, which is contained in the beef and mutton. Between beef and mutton there is little to choose. The quantity of tea or coffee is always limited—usually not more than a single cup at each meal—and, of the two, tea appears to be generally preferable to coffee. Of ale or wine, a glass or two is all that is allowed.

Atmosphere, Impure, by Air from Lungs (*Gr. atmos*, vapour, *sphaira*, sphere).—The existence of refuse matter in the atmosphere is not easily demonstrated, and yet one visit to the steerage of an emigrant ship, the crowded ward of an almshouse, or any similar place, will furnish powerful evidence that a hundred persons breathing the air of a moderately large room soon renders it foul and unwholesome. Of course, exactly the impurities with which the hundred poison the

atmosphere in half an hour would be given off from the lungs of ten persons in five hours, or by a single individual in about two days' time.

Atmosphere, Impure, how Detected.—No one need ever be in doubt as to whether the atmosphere of a room is satisfactorily pure, for we are provided with special organs for the purpose of criticising the air we breathe. Just as we test our food and drink by the sense of taste, and refuse tainted food or impure drink, wherever good food and drink are accessible, so our sense of smelling is placed in the air passage of the nose especially to guard our lungs from tainted air; and though we can deaden this naturally active organ by neglect, so that we become callous to the gradually increasing impurity of a close room, yet we can revive our susceptibility by simply leaving the room and going into the fresh air for a few minutes, and on returning we shall be able to effectually use our sense of smelling, and decide whether the room is harmless; for, whenever the air is thus perceptibly impure, it is certainly injurious to health, and requires immediate attention.

Atmospheric Changes, Injuries from.—The unquestionable benefit which free exposure to the air in all weathers confers is subject to certain drawbacks. It is not necessary to consider sunstroke in the case of day-labourers, nor accidents by falling from roofs, or from railway collisions, as coming within the present section; but there are certain causes which affect the health permanently, as bronchitis and pneumonia; and to this may be added a liability to paralysis of the facial nerve, which is especially the possession of drivers of carts, etc. Bronchitis and rheumatism are common enough also among those whose trade exposes them to great heat, as blacksmiths, stokers on steamships, workers in foundries, puddlers, glass blowers, dyers, and washerwomen. It is, in fact, neither heat nor cold that causes the trouble, but excessively rapid

transitions from heat to cold. The trade of baker is apt to be very unhealthy owing to the confined, close, dark, overheated quarters in which it is carried on; also the night-work and occasional excess of work.

Atmospheric Conditions, Effect of, on the Health.—The air is not only the means at times of communicating poisons, but its various conditions as to temperature, dryness, weight, etc., may prove the immediate cause of disease. As regards the temperature of the air, it is of great importance whether the air is in motion or at rest. Air only a few degrees colder than the surface of the body, but which passes rapidly over it, is found to have a much greater cooling effect on the system than motionless air of a much lower temperature. In cold climates we are more likely to encounter diseases of the lungs and air-passages; whilst fever is to be looked for in warm climates. The latter, however, often arises in a great measure from the heat-promoting vegetable putrefaction, and consequently miasmata, and this is more particularly the case when the heat is accompanied by moisture.

The action of moist air on the body is easily understood. When the air is at the same time both hot and moist, the large blood-vessels are stimulated to increased action by the heat, which also relaxes the pores of the skin, and in this way perspiration is promoted. As the air, however, is already loaded with moisture, it refuses to take up the moisture from the body, and, as a natural consequence, we have a turgid condition of the vessels and a sensation of heaviness and weight. This explains why it is that, in what is known as "muggy weather"—although the atmosphere is really lighter than at other times—we ordinarily complain of heaviness and oppression. During cold damp weather, on the other hand, the perspiration is checked by the cold, and the air makes no demand for the moisture.

In dry cold air we experience just the opposite effect to that of moist hot weather.

The cold has a tendency to check evaporation from the skin, whilst the dry air demands moisture. As a natural consequence people feel cold and starved, as we should expect, from the fact that a demand is made upon the body, whilst at the same time the ability to supply that demand is checked. In moist cold weather a balance is maintained between the absence of demand by the air and the check from the cold on the supply from the body.

The weight of the air has a marked effect on the body. The increased pressure may be felt by anybody who descends in a diving-bell, and those who ascend very lofty mountains and mount in balloons often suffer from the diminished weight of the air, and consequent diminished support to all the blood-vessels and other parts, producing hæmorrhage in those who are unaccustomed to such situations.

The diseases caused by climate cannot possibly be avoided by the mass of individuals. It may be laid down as a general rule that if we live in low marshy districts we must expect agues and low fever; that if we have to encounter a constant east wind we must philosophically expect decayed teeth; and that if we reside in the unoxidised air of towns we must look for a comparatively feeble state of health.

Attendants during Labour.—

See LABOUR, PREPARATIONS FOR.

Auditory Canal (*Lat. auditōrius*, that which can convey sound; from *audio*, I hear. *Lat. canalis*, from *canna*, a reed).

—The auditory canal may be said to be a continuation inward of the trumpet of which the auricle is the broad and flaring mouth. It is closed hermetically at its inner end by the drum-head, or *membrana tympani*. The skin of the auditory canal, besides the usual elements of skin, viz., sebaceous, perspiratory, and hair glands, contains at its outer part, around its entire calibre, the ceruminous, or ear-wax glands. These are between one and two thousand in number, and resemble in their structure the sweat glands;

they are indeed what the anatomist calls modified sweat glands. Their function is to secrete the wax of the ear, with which all are familiar. This substance is of the highest importance to the comfort and health of the auditory canal. So long as the outer end of the canal wall is smeared with this wax, the skin is free from itching and the ear is comfortable. Its peculiarly glutinous and bitter nature is a protection against insects, and it also prevents the growth of fungi, or mould, in the canal.

Auditory Canal, Diseases of

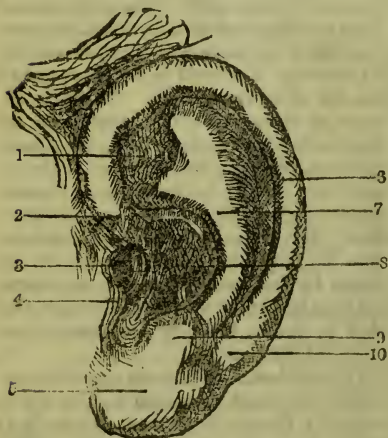
the.—No bead, button, pea, grain of wheat or barley, or, indeed, any similar small smooth object which a child can put into its ear will do any harm, *if let alone*, by all save one entirely conversant with the structure of the ear, and properly supplied with instruments for examination and treatment. If a child, therefore, gets any such foreign body in its ear, it is a matter of certainty that such object has not gone beyond the reach of surgical skill. The harm in such cases *usually* arises from the unskilful means resorted to in haste and consternation for its removal. It should be let alone until it can be properly removed. It can do no harm at the outset; it cannot reach the brain unless it be pushed there; but a careless grappling for a foreign object in the ear may force it still farther inward, lacerate the auditory canal, and perforate the drum-head. Of course, such things as beans and peas do harm, and should always be removed in time and by the proper person; but they had better stay in the ear for ever than be sought after by the ignorant and unskilled manipulator.

The simplest, softest, most agreeable, and usually the most successful way to try to remove a foreign body from the ear is to gently force it out by syringing. This method is applicable especially to insoluble and inanimate bodies. Too long continued use of the syringe in case of entrance of grains of corn or of beans into the ear would often soften and swell them. But a trial of this method should be given for a

reasonable time in any case by any one who is not within reach of a physician.

Auditory Canal, Neuralgia in. —See NEURALGIA IN AUDITORY CANAL.

Aural Vertigo, Treatment of (*Lat. au'ris*, ear: *ver'tigo*, a whirling round; from *ver'to*, I turn).—Both physician and patient should be careful not to ascribe to biliousness the symptoms arising from aural vertigo. Yet this mistake is constantly made, and consequently the wrong treatment followed. It may be said that a treatment beneficial in an attack of so-called "biliousness," which in some respects an attack of aural vertigo closely resembles, is absolutely injurious in the latter disease. If aural vertigo be due to a foreign body in the external ear, removal of the offending object will cure the vertiginous and any other symptoms excited by the irritation in the outer ear.



THE AURICLE, OR OUTER EAR.

Auricle (*Lat. auricula*, the ear-flap, or external ear).—The name given to the muscular sacs or cavities situated at the base of the heart, one on either side, and so called

from the fancied resemblance of these cavities to the external ear of some quadrupeds. (See HEART.)

The auricle, or ear of common language, is a shell of cartilage, covered with skin, closely fitting every groove and ridge of the underlying cartilaginous frame, excepting at its lowest pendant part. Here the skin is reflected over a cushion of delicate fat, making the lobate flat part to which earrings are usually fastened.

The auricle, or outer ear, is represented in the accompanying figure: 1, the pit of the antihelix; 2, 6, 10, the so-called helix, the curved edge of the auricle; 3, the meatus, or mouth of the auditory canal; 4, the tragus; 5, the lobule; 7, the antihelix; 8, the concha; 9, the antitragus.

Auricle, Diseases of the.—The auricle, or outer ear, is liable to frost-bites in very cold countries. Although this is not dangerous either to the health of the individual or to his hearing, it is painful in the end, and may be disfiguring. When the auricle is frost-bitten, it becomes very white and dead-looking. It is also very brittle and insensible. Great care must be taken not to break it, and also not to heat it too quickly. Gentle handling is therefore necessary, and heat must not be applied at all at first. A gentle chafing or rubbing with snow or ice will be the best way of restoring *slowly* the circulation of the blood to the frost-bitten part. Apply cold water until the skin of the frozen ear begins to have feeling in it once more; then the organ is safe.

The illustration given in Fig. 1 is the organ of hearing shown diagrammatically by making a transverse section through the side-wall of the skull. In this *a* is the pinna; *b*, the external auditory meatus; *c*, the membrana tympani; *d*, the cavity of the tympanum; *e*, the malleus; *f*, the anterior semicircular canal; *g*, the Eustachian tube.

Fig. 2 is a representation of the outer surface of the pinna or auricle: *a* being the concha; *b*, the tragus; *c*, the antitragus; *d*, the lobule; *e*, the antihelix; *f*, the fossa of

the antihelix; *g*, the helix; *i*, the fossa of the helix.

Auricle, Imperfect Development of.—Sometimes individuals are born without auricles; or they may be born with several auricles, some of which may be unnaturally placed, as, for example, low down on the neck. Again, the auricle may be only partially formed; yet with all these defects the hearing may be good. The hearing is rarely affected in such cases unless the defect of the auricle is found to extend to

sary, or mixed naturally with nutritious food. These substances are mostly added by choice, or voluntarily sought by man, either to gratify his palate or to act upon his nervous system. They are generally called medicinal or auxiliary foods—medicinal, because they act like medicines upon the system; auxiliary, because they stimulate the powers of the stomach and aid in the digestion of the food. This class comprises such substances as alcohol, volatile oils, tea, coffee, and tobacco, which constitute a very large group of substances used

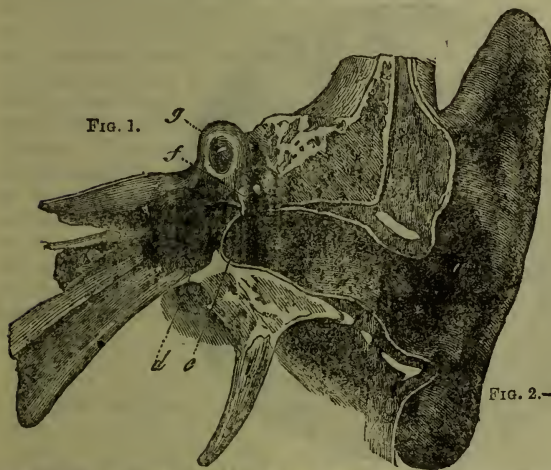


FIG. 1.



FIG. 2.—OUTER SURFACE OF AURICLE.

FIG. 1.—TRANSVERSE SECTION OF EAR THROUGH SIDE WALL OF SKULL.

the auditory canal or deeper parts of the ear.

Australian Meat.—See PRESERVED MEAT.

Australian Wines.—See WINES OF COMMERCE.

Autumnal Ague.—See AGUE.

Auxiliary Foods (*Lat.* *auxillum*, help, assistance).—Besides substances necessary or accessory, there are a number of things taken as food which are not neces-

for the sake of flavour and their action on the nervous system and circulation.

Bacillus (*Lat.* *bacillum*, a little stick, diminutive of *baculum*, a stick).—A slender vegetable rod-like organism, perceptible only under a powerful microscope, and so called on account of its shape. In accordance with the "germ" theory which has been promulgated in the medical world of late years, and is accepted to a considerable extent by medical men, all diseases are supposed to be occasioned by bacilli, which are received into the human body by inoculation and inhal-

ation, and possibly other processes akin to these. Whether this is or is not so, there is no necessity to discuss here, as discussion would be out of place in a volume devoted to the consideration of the healing art as far as it may be practised at home, and the nature, symptoms and treatment of ordinary diseases. It is mentioned rather as an incentive to cleanliness generally, but especially in illness, and the temporary isolation of patients who are suffering from zymotic or infectious diseases. According to the bacteriologists who support the "germ" theory, and the

so, the theory very closely resembles that of the homœopathists, who assert that "like cures like." (See also KOCH'S TUBERCULINE.)

Back, Sprains of the.—Sprains of the back are usually caused by a fall from a height, or from a weight coming down suddenly on the neck or shoulders. The structures suffering are the fibrous ones generally. There is considerable swelling in the loins soon after the accident, and great pain on any attempt at motion. The inconvenience



BACILLI OF TUBERCULAR PHTHISIS, SEEN THROUGH MICROSCOPE.

causation of diseases by organisms endowed with life and endued with motive power, every disorder has its different bacillus, which, according to them, is recognisable. Thus, the cholera bacillus has one form, the tubercle bacillus, or bacillus that causes tuberculosis, or consumption, another. Dr. Koch's lymph, given to the world by him in 1890, and injected into sufferers from lupus and consumption, for the cure of these disorders, is a fluid permeated with the active principle of bacilli, which, to speak in as simple terms as possible, counteract the baleful effects of those which cause the disease. If this be

arising from a severe sprain in the back lasts a long time; so that a person may be confined to his bed or sofa for a fortnight, and it may be many weeks or even months before he completely loses pain. There may be some transient effect produced on the kidneys, and blood may be found mixed with the urine for a few days; but rarely any bad effects ensue.

Back, Sprains of the, Treatment of.—The treatment of affections of this kind consists in giving a mercurial purgative, followed by Dover's powder, poppy

fomentation to the back, made with an old soft blanket covered with thin oil-cloth and with dry blankets; or the part may be covered with thick compresses of cotton-wool, soaked in a solution of tincture of arnica, in the proportion of an ounce to a pint, and laying gutta-percha tissue or oil-skin over it. When the person can sit up, some stimulating liniment, or compound tincture of iodine, may be used, and a warm plaster applied to the loin.

Bacon.—Pork becomes bacon when cured, or preserved by salting and drying, and generally by the additional process of smoking. There are considerable varieties in the composition of bacon. It invariably contains less water and more mineral matter than the pork from which it has been prepared, while the fat in it is more easily digested. "Highly smoked and dried bacon," says Professor Church, "sometimes retains but 12 or 14 per cent. of moisture; but a fair sample of streaky bacon, such as would be selected for the breakfast table, would be nearly represented, both as to moisture and its other chief constituents, by the following numbers:—

	In 100 parts.	In 1 lb.	
		oz.	gr.
Water	22·3	3	243
Nitrogenous matter . .	8·1	1	130
Fat	65·2	10	189
Salt	3·8	0	256
Phosphates, etc. . .	0·6	0	42

Cured bacon sometimes grows rancid or *rusty* through exposure to air: this may be prevented by storing it in dry bran. Another injury to which bacon is subject arises from the attacks of a small fly, the larvæ of which are known as "jumpers." (*See also* PORK.)

Bacon has been highly extolled by some as a remedy for indigestion; by others, however, quite the contrary opinion is held. "In the great majority of cases," says Dr. Robertson, "it cannot be so, but on the contrary must tax still further the powers of the stomach or irritate still further its tissues, which, under such circumstances,

may be already in a state of morbid sensitiveness. Bacon is obtained from the most difficultly digested of the meats, the fleshy fibres of which are toughened by the salt and the drying. That fat is rendered more digestible by being impregnated with salt is an admitted fact; and this must of course qualify these strictures on the use of bacon. But the lean of bacon is rendered more difficult of digestion by the same process that has increased the digestibility of the fat; and the fat is not by any means so altered in character as no longer to irritate the debilitated stomach. I have no hesitation in saying that in the greater number of cases of dyspepsia, bacon does harm."

Bacon not eaten by Jews.—In the Mosaical Law, the pig is condemned as an unclean beast, and consequently interdicted to the Israelites, as unfit for human food. "And the swine, though he divide the hoof, and be clovenfooted, yet he cheweth not the cud; he is unclean to you" (Lev. xi. 7). Strict, however, as the law was respecting the cud-chewing and hoof-divided animals, the Jews, in certain parts of Palestine, with their usual perversity and violation of the divine commands, kept droves of swine, as is evident from the circumstance recorded in Matthew viii. 23-34, when Jesus was in the country of the Gergesenes, and the devils cast out of the two men were permitted to enter the herd of swine that were feeding on the hills in the neighbourhood of the Sea of Tiberias. These swine were in all probability kept for sale to the Roman soldiery and settlers in Judæa, when under the rule of the Cæsars, as the Romans had no objection whatever to the flesh of swine in any form, but rather preferred it. There is only one interpretation by which we can account for a prohibition that barred the Jews from so many foods which we regard as nutritious luxuries, that, being fat and the texture more hard of digestion than other meats, they were likely, in a hot, dry climate, where vigorous exercise could seldom be taken, to produce disease, and especially cutaneous affections; indeed,

in this light, as a code of sanitary ethics, the book of Leviticus is the most admirable system of moral government ever conceived for man's benefit.

Baking.—This is an operation somewhat similar to roasting and broiling, but intermediate between them and boiling, yet not so good as either. The degree of heat is sufficient to produce an offensive odour, called *empyreuma*, and the closeness of the oven preventing its escape, it unavoidably contaminates the meat. This, however, is not perceptible or in any way unpleasant, if the oven be, as most ovens are, supplied with means of ventilation.

Baldness.—The subject of alopecia (*Gr. alo'pex*, a fox), or baldness, is very frequently, though not always, the result of *seborrhæa*, or *acne sebacea*, a disease of the sebaceous glands or sweat glands (see *SEBORRŒA*). Other causes of baldness, temporary or otherwise, resulting from illness, or bodily or mental ailments, or old age, are mentioned below.

Baldness after Fevers.—After fevers or exceedingly acute diseases the hair, which during the period of the disease has remained stationary in its growth, generally falls off and a new growth begins, which at first very frequently differs in its characters from the hair before illness. Then, too, it usually grows faster for a time. Usually a good growth of strong hair may be taken as a sign of a vigorous constitution. A thin crop of sandy, that is, imperfectly coloured hair, commonly marks one in whom the original force of bodily growth has been deficient. Thinning of the hair may take place from a variety of causes, and very often precedes absolute baldness (*alopecia*). Sometimes there is total loss of hair over a limited surface as the result of parasitic disease.

Baldness, Entire.—Complete loss of hair may begin early in life, and it may begin in one spot and gradually extend, or commence as thinning only. This has been

assigned to various causes; they resolve themselves into this, that the power of forming hair ceases, and that present falls. Grief, great mental anxiety, or over brain-work, are the most frequent causes of premature baldness. That baldness which occurs in the course of years is due to the general atrophy of the body, which, beginning at various periods of life, invariably ends in death, supposing the individual is not carried off by some intercurrent malady. When the hair thins generally all over the head, the scalp is commonly seen to be dry and scurfy. Frequently, too, in these cases the hair itself alters, splits up at the end, tends to break off, and becomes dry and unruly. Both these conditions, though due to local causes, are, through these local alterations, dependent on some alteration in the general system, to which, and not to the hair, the attention must be directed. This is quite different in parasitic disease giving rise to baldness; then the fungus causing the destruction of the hair must be dealt with.

Baldness of Old People.—This is generally preceded by alteration in the colour of the hair, which becomes grey. It generally falls first from the very top of the head, and thence gradually spreads. Baldness in young people arising from parasitic disease is not preceded by alteration in colour. Generally, there is some local irritation, and in this spot the hair begins to fall. This is usually on the side of the head, and frequently the hair is broken and stubby round the bald spot. This form of baldness is commonly called ringworm. Baldness almost invariably follows syphilis during the period of secondary eruption. This baldness is sometimes sudden and very complete, the hair coming out literally by handfuls.

Baldness, Treatment of.—When hair falls off through disturbance of the constitution, it is mostly the custom to give arsenic, and frequently, when there is much nervous debility, arsenic does good, but not

because of its fancied action on the skin, rather because it is a really good, serviceable tonic. Iron, quinine, and strychnine will generally do good. If the hair follicles are totally wasted, local measures will do no good; but if they are in a condition to respond to stimulation, local applications may restore a goodly head of hair. If downy hairs are visible, these may usually be made to grow by stimulation; even if they are entirely absent, good may be done if the scalp look at all natural. If white, shiny, and with little fat below the skin, there is not much hope. If, too, the scalp be swollen or thickened, some local application will be required. The best for this last is tincture of iodine, but it must be used with caution.

Baldness, Treatment of, by

Stimulants.—When there is a chance of getting the hair to grow again, stimulants may be used. If there are downy hairs, let the head be shaved and a blister lightly applied, for, of all stimulants to the growth of hair, Spanish flies (cantharides) are the best. These must be used repeatedly, if necessary. When the hair is thinned only, the first thing is to restore the scalp to a healthy condition. The scurf should be got rid of by bathing with tepid water night and morning, and the constant application of glycerine and lime-water in the interval. No fats or oils are to be used at this period, as they are apt to go rancid and so irritate the irritated scalp still more, but glycerine and lime-water, or *fresh* olive oil and lime-water, may be used. A very good compound for gently acting upon the hair follicles is to be obtained by adding a few drops of tincture of cantharides to toilet vinegar, and gently damping the scalp after it has been well washed with the compound. In short, the principles above laid down are those which must guide any individual in dealing with the hairy scalp. Each may apply them for himself.

Baldness, Treatment of, must be suited to case.—To accomplish the

restoration of the scalp to health, many elements need to be taken into consideration; therefore, a dozen cases of baldness might be treated in a dozen different ways, and with success, provided each plan were adapted rightly to the state then present. The hair, deriving its nutrition and stimulus of growth from the general system, must soon suffer with lowered vitality; and while it may be stimulated into a temporary growth by various local irritants, this can neither be healthy nor permanent, because the fountain whence the supply of nourishment is drawn fails to a greater or less extent. We can appreciate therefore the evil of advertising this or that remedy as a sure cure for baldness, the fallacy of which is proven by a dozen or a hundred failures to each success.

Banana.—The banana, which is imported to some extent into this country as a dessert fruit, is a nutritious product,



BANANA AND CASTOR-OIL PLANT.

having less water and more nitrogenous matter than is usually found in fresh fruits. It contains, when ripe, a large proportion of sugar, but very little starch.

Bandage, Many-tailed.— See MANY-TAILED BANDAGES.

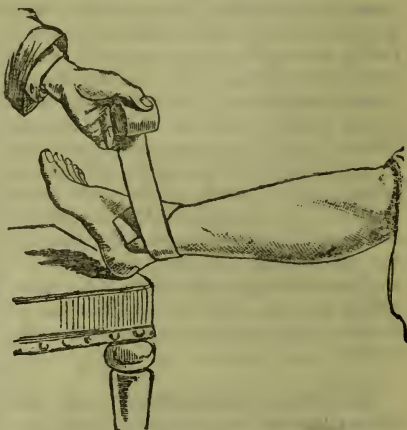
Bandage, Plaster of Paris.—See PLASTER OF PARIS BANDAGE.

Bandage, Starch.—See STARCH BANDAGE.

Bandage, T.—See T BANDAGE.

Bandaging, Rules for.—There are some few plain rules which ought to be attended to in the application even of the simplest bandage which can be used, as the *manner* in which it is bound round the limb makes all the difference in the comfort of the patient. It will be found most convenient to hold the roller on the inner side of the limb (if it be a limb) to be bandaged, so that in the case of the *right side* being operated upon, the bandage is held in the operator's *right* hand and *vice versa*, and for expedition in application the portion which is still unwound should be *underneath* that which is being wound round the limb; in fact, the bandage should form a sort of continuous figure of eight. On first starting off, rather more than the circumference of the limb should be unwound, and cast around the part, and the hand not employed in holding the bandage made to tuck the free end under the first complete turn. If this slight manœuvre be dexterously done, the bandage will never slip, unless purposely unwound. It is then lightly but firmly wound round the limb by a series of turns as far as required. Now it is evident that, in the case of a well-shaped muscular limb, winding cannot be made evenly, as it will not lie flatly; the simple device of reversing is then employed: it consists of taking a turn in its application, and bending it upon itself by changing the surface of the roller which is applied to the skin, by making an acute angle or reverse at each turn, and giving it a sharp "twitch" at each. In bandaging the arm or leg, it is best to commence with a few turns round the hand or foot first, whether it be for the retention of splints or dressings. Bandages should always be applied with equal pressure throughout, and not too lightly. Bandages, such as the above, may be rendered hard

and strong by smearing their successive turns with gum, plaster of Paris, glue,



HOW TO COMMENCE BANDAGING THE LEG.

paste, or white of egg, which speedily sets, serving the double purpose of bandage and splints.

Banting's Dietary.—Mr. Banting's plan of dietary for stout people, slightly modified, is as follows:—

Breakfast (about 8.30 a.m.). Four or five ounces of beef, mutton, kidneys, boiled fish, bacon, or cold meat (pork or veal excepted), or two eggs (not hard boiled), a large cup of tea or coffee (with neither milk nor sugar), a little biscuit, or an ounce of dried toast, brown bread, or crust off a common household loaf.

Dinner (about 1 p.m.). Five or six ounces of fish (any sort, except salmon, herrings, or eels), any meat (pork or veal excepted), any vegetable (except potatoes, parsnips, beetroot, turnips, or carrots), an ounce of dry toast, a crust cut from the loaf, fruit out of the pudding (omit the sugar), any kind of game or poultry, and two glasses of dry sherry, or three of good sound claret (no champagne, port, or beer to be taken).

Tea (about 5 p.m.). Two or three ounces of fruit, a rusk or two, and a cup of tea (without milk or sugar).

Supper (about 8.30 p.m.). Three or four ounces of fish or meat, and a glass or two of claret.

Barberries.—This is a fruit of such great acidity that even birds refuse to eat it. In this respect it nearly approaches the tamarind. When boiled with sugar it makes a very agreeable preserve or jelly, according to the different modes of preparing it. Barberries are well calculated to allay heat and thirst in persons afflicted with fever.

Bare Feet for Children.—On the subject of wearing neither shoes nor stockings in the case of children, a writer in the *Lancet* says: "A question has been raised whether, in England, children might not with advantage be allowed to adopt the practice prevalent in Scotland, Ireland, and many large districts on the Continent and in the Colonies, of going bare-footed. As against the custom of wearing bad shoes that will let in the water and are soaked in wet weather, and stockings which are rarely changed, there can, we think, be no ground to doubt the expediency of abandoning foot-coverings altogether. Nature will be her own shoemaker in the matter of protection, the cuticle being hardened just where a pad is needed and nowhere else, and she will amply provide for due defence against cold by establishing a more abundant supply of blood to the extremities. As a matter of fact, the heat of the body depends on the vital processes carried on within it, and these are amply sufficient to meet every want. Then, again, it is true, as the medical officer has, in the case to which we allude, reported, that if the foot is not encased in a hard frame or box which impedes the action of the muscles and joints, that organ will be capable of better work in walking and jumping, and it will be more fully nourished, in obedience to the law that makes the nutrition of every part and member of the body dependent on exercise for efficiency. To these considerations must be added, that when the extremities are habitually exposed there is less danger of

cold-catching than when they are 'protected.' On hygienic grounds, bare feet are certainly admissible, and the fact that foot-coverings are not employed by the inhabitants of regions with climates colder and more variable than our own is evidence that they are not indispensable, or, as we believe, conducive to health in England. Habit and fashion alone enjoin the wearing of shoes, and to those who in early life are accustomed to go without these articles of dress there is not only no hardship, but an immunity from many troubles—chilblains, corns, cramped toes, and tender feet prominently among the number."

Barley.—This is a well-known grain, valuable as an article of diet, both as an addition to soups and broths, and, when ground in the form of meal, as a nutritious food. The medicinal drink known as barley-water is made from pearl or Scotch barley, and, if carefully made, is a pleasant and soothing drink in diseases of the throat and chest. (*See BARLEY WATER.*)

Barley Bread.—Barley bread has a sweetish but not unpleasant taste; it is, however, rather viscid, and is less nutritive as well as less digestible than wheaten bread. It is common to mix pea-meal with the barley, which certainly improves the bread.

Barley, Decoction of.—*See DECOCTIONS.*

Barley-Water.—Take three table-spoonfuls of pearl barley, wash in cold water, and pour about a tumblerful of cold water over it, boil for fifteen minutes. Throw this water away, and having heated two pints of water, pour them over the barley; boil down to one-half, then strain.

Barometer (*Gr.* *bar'os*, weight, *met'ron*, measure).—An instrument for determining the weight or pressure of the atmosphere. There are two forms, one known as the wheel, or common barometer, and the other known as the aneroid baro-

meter. This latter is the form used for determining the heights of mountains and elevated spots.

It would have a favourable influence on health if the public had a more general acquaintance with the use of the barometer. The lower the barometer falls, the heavier and more impure is the atmosphere; hence many diseases increase in gravity towards sun-down, when the atmosphere is heavier, not only by reason of its dampness, but by incidental impurities which the cooler air condenses on the surface.

Barrenness, Causes of.—The causes of barrenness are various, but the most usual kinds are: (1) Barrenness from impotency, or imperfection, or abolition of the conceptive power; (2) Barrenness from the monthly discharge being either morbidly retained, or secreted with difficulty, or in profusion; (3) Barrenness from personal aversion, or want of appetency. And the first kind may be either atonic or organic—that is, proceeding from direct imbecility or want of tone, or produced by some structural hindrance or defect, whether natural or accidental.

Barrenness, Treatment of.—(1) When the barrenness proceeds from imbecility or want of tone, the proper remedies are, local and general tonics, and stimulants, especially cold bathing, preparations of iron with bitters, electricity, combined with change of air and scene. Abstinence, for a time, is likewise very advisable. If this description be produced by some hindrance or defect in the structure of the parts concerned, the most efficacious course consists of alteratives, and an occasional tepid bath at about 95 degrees, the bowels being kept regular with a mild aperient pill.

(2) When the barrenness arises from irregular menstruation, the cure must depend upon a removal of the particular kind of morbid affection that operates at the time, and lays a foundation for the disease.

(3) Female sterility from personal aversion is a complaint irremediable by the

healing art, and can only be attacked by a kind, assiduous, and very affectionate attention, which will rarely fail of its object.

When married couples, possessing a full habit of body, or great constitutional vigour, are destitute of children, the ordinary effects of a spare diet, united with daily active exercise, are worthy of their attention. In such cases, a well-known physician was in the habit of putting both the male and the female on a diet of milk and vegetables, and asserts that he has known this succeed in several instances. The effects of a spare and rather low diet upon the procreative powers are certainly remarkable and within the sphere of every man's observation; for the married poor almost everywhere abound with children, while the rich are often childless, and large families among them are comparatively rare.

Barytes.—A substance called *barytes*, or *baryta*, has been much used to poison rats. It is a white ponderous earth, usually sold in powder. It is very poisonous, and being frequently called for may become the source of poisoning by accident or otherwise. The symptoms produced by taking barytes are—a sense of burning in the stomach, vomiting, griping, purging, paralysis, convulsions, and death.

Barytes, Antidote to.—The antidote in cases of poisoning by *barytes* is either Epsom or Glauber's salt, of which somewhat more than the quantity of barytes taken will by chemical decomposition and re-combination produce an insoluble and inert salt, which will pass off by the bowels. Should the poison, however, have been taken long enough to produce pain and sickness, besides giving a full dose of salts dissolved in water, mild mucilaginous drinks, as milk, barley-water, etc., should be ordered; and the stomach pump should be used as soon as it can be procured. In addition to this, leeches should also be applied to the stomach, and every other means for subduing inflammation be used.

Basil, Sweet.—See SWEET BASIL.

Bath, Cold.—*See* COLD BATH.

Bath, Cool.—*See* COOL BATH.

Bath, Daily.—*See* DAILY BATH.

Bath, Hot.—*See* HOT BATH.

Bath Recommended.—It is related of the celebrated but eccentric Dr. Abernethy, that upon one occasion a child was brought to him suffering from disease of the skin, it is true, but in a far worse condition from want of cleanliness. The doctor, seeing at once that this latter misfortune was the cause of the former, said to the boy's mother, "I can soon cure your son if you will strictly follow my directions. Get a large tub, fill it every day two-thirds full of warm water, put the little fellow into it, and then rub him all over with the best Castile soap, and a coarse towel." "But, doctor," exclaimed the astonished woman, "that would be giving the child a bath." "True," replied the physician, "it is open to that objection."

Bath, Shower.—*See* SHOWER BATH.

Bath, Temperate.—*See* COLD BATH.

Bath, Warm.—*See* WARM BATH.

Bathe, How often to.—The frequency with which a bath should be repeated varies somewhat with different individuals. Some there are whose skins exude a certain amount of strong-smelling materials, for whom a bath twice daily in warm weather is almost a necessity; whilst others, whose skins are less active as common sewers for the impurities of the system, need only a daily or tri-weekly ablution. There is no doubt that bathing, like all other good things, may be carried to injurious excess, and we have often seen patients seriously impair their health by too frequent resort to the bath-tub. At the same time, it is equally certain that by far the majority err in the opposite direction, and as the records of hospitals for skin diseases testify, fail to yield sufficient obedience to the command, "Wash, and be clean." A safe rule, to

which there are sundry exceptions, would be to bathe the whole body twice a week in winter and every other day in summer, gradually increasing this frequency to a tri-weekly washing in winter and a daily one in summer, if experience proves that better health is secured by such a habit.

Bathe, When not to.—Baths should never be taken immediately after a meal, nor when the body is very much exhausted by fatigue or excitement of any kind, nor during nor just before menstruation; and they should be sparingly and guardedly used by pregnant women.

Bathers, Advice to.—*See* ADVICE TO BATHERS.

Bathing, Physiological Effects of.—On the immediate physiological effects of bathing on the system, Sir Erasmus Wilson may be quoted. "When the body," says that well-known authority, "is moistened with a sponge wetted in cold water, or when effusion by the sponge or shower-bath is effected, the skin immediately shrinks, and the whole of the tissues contract. As a result of this contraction, the capacity of the cutaneous system of vessels for blood is diminished, and a portion of the blood circulating through them is suddenly thrown upon the deeper parts and internal organs. The nervous system, among others, participates in and is stimulated by the efflux, and communicating its impression of stimulus to the whole system, causes a more energetic action of the heart and blood-vessels, and a consequent rush back to the surface. This is the state termed 'reaction,' the first object and purpose of every form of bathing whatsoever—the test of its utility and security. Reaction is known by the redness of surface, the glow, the thrill of comfort and warmth, which follow the bath, and the bather should direct all his care to insuring this effect. By it the internal organs are relieved, respiration is lightened, the heart is made to beat calmly and freely, the mind feels clear and strong, the tone of

the muscular system is increased, the appetite is sharpened, and the whole organism feels invigorated. This is the end and aim of the bather, and to this all his training tends. The error is to expect the result without the preparation. After a proper training the most plethoric and apoplectic individual may derive health and safety from systematic bathing; but it will be seen at a glance, by the above explanation, that without the training the attempt would be madness.

"But the reader must not imagine, because there is danger in bathing in a particular case, that the practice is dangerous; that would be an erroneous inference. Food, raiment, and exercise, when judiciously used, are the source of many enjoyments, and the means of our existence; and I think it will be granted me without difficulty that excess in either is replete with danger. Are we to give up the use of food because an incautious person eats himself into an apoplexy? Bathing is as little dangerous as food, the difference between the two being that we prefer the one, and therefore take it under the mantle of our protection, while we repudiate the other, because it is less agreeable to our appetites, or perhaps a little troublesome."

Bathing, Sea.—See SEA BATHING.

Bathing, Usefulness of.—In order to understand the value of bathing, the reader must bear in mind that there is constantly exhaling from the surface of the skin a large amount of fluid and solid matter; the fluid escapes into the air, and the solid, for the most part, remains upon the surface of the skin, and must be removed or else the pores are stopped. There are upon the palm of the hand alone 3,528 perspiratory pores in a square inch, each of these being the opening of a little tube about a quarter of an inch long: in a square inch of skin, consequently there are 882 inches of drainage. What if these drains are obstructed? Over the whole body there are twenty-eight miles of little drain-pipes, with many thou-

sands of openings at the surface of the skin. When this beautiful provision for throwing off impurities and keeping up healthful secretions is made useless by unclean accumulations at the mouths of all the little drains, it is obvious that the body must be kept in a debilitated and flabby condition. Bathing is the remedy for this state of things.

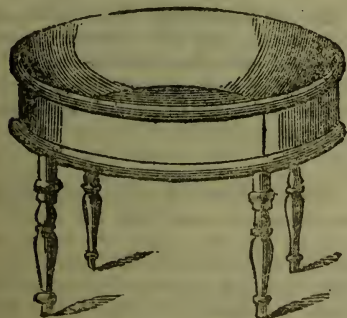
It is easily seen, therefore, that bathing is likely to be of excellent use and efficacy both in the prevention and cure of disease. Though the ancients could less dispense with the use of the bath, on account of the frequency of their athletic exercises, as well as from want of linen, which was then much less in use than at present, yet in our times it would be of great service if the use of baths was more general and frequent, and this beneficial practice not confined to particular places or seasons, as a mere matter of fashion. Considered as a species of universal domestic remedy, as one which forms the basis of cleanliness, bathing, in its different forms, may be pronounced one of the most extensive and beneficial restorers of health and vigour; and it is often one of the greatest service in the cure as well as in the prevention of diseases.

But the utility of different baths much depends on a clear and accurate knowledge of their properties and effects, and on their correct application to the state of the patient's constitution. On this subject, however, we shall have more to say when we come, in a succeeding portion of our work, to speak of the treatment of disease.

The sick and valetudinarians should remember that the effects of bathing are not the same in all conditions of the system, but derive their character more from the varying circumstances of the patient than from any intrinsic properties they may possess of universal activity. Hot and cold baths are neither strengthening nor debilitating in themselves, but become so merely in consequence of certain states of the body at the time of their application. The same application which, in a strong person, produces increase of strength, may tend imme-

diately to debilitate the feeble; and that which is a stimulant when used in moderation, becomes rapidly destructive to vital power in an excessive dose.

Bathing, when Hurtful.—In the following cases the cold bath is altogether inadmissible. 1. In a general plethora, or full habit of body, and in the febrile disposition which attends it. 2. In active hæmorrhages, or fluxes of blood; that is, bleedings attended with a quick, hard, full pulse, and other signs of an inflammatory tendency. 3. In every kind of acute inflammation. 4. In diseases of the breast, difficult breathing, and short and dry coughs. 5. In gouty and rheumatic paroxysms. 6. In most diseases of the skin. 7. In a state of pregnancy. 8. In palsy. In indigestion it is also generally hurtful, at least in the commencement of the treatment; and whenever it occasions chilliness, loss of appetite, languor, pain of the breast or bowels, or violent headaches, it ought to be discontinued. These unpleasant sensations are the surest proofs that the actual state of the patient's habits is unfit to bear the shock; and that either the reaction of the heart and arteries is too weak to overcome the cold pressure on the surface, or that the determination to the head, or some other vital part, is too rapidly increased.



INFANT'S BATH.

Baths for Children, etc.—Children and elderly persons ought to employ

warm or but slightly cool baths, never below 70° Fahrenheit. By persons of nervous temperament, and the subject of valvular disease of the heart, cold baths should be very cautiously resorted to, but by robust adults of sanguine or bilious temperament, they may be indulged in with much greater freedom.

Baths in Old Age.—During every period of life benefit is to be derived from the judicious employment of baths. In old age the tepid bath is that which is most universally applicable. It should therefore be adopted in preference to all others. By the influence of baths the skin is kept healthy and acting vigorously, and those who neglect to employ them deprive themselves of a source of much comfort and health-giving power.

Baths, Proper Temperature of.—Frequently the medical attendant orders a bath, merely mentioning the name, and without giving any instruction as to the temperature. Thus he may order a cold bath, a tepid, a warm, or a hot bath, without giving any further injunctions; and in order that the meaning attached to each of these words may be known, the following table is introduced, giving the degree of heat which is represented by the terms thus employed:—

Cold	33° to 65° Fahr.
Cool	65° to 75° „
Temperate	75° to 85° „
Tepid	85° to 94° „
Warm	94° to 98° „
Hot	98° to 112° „

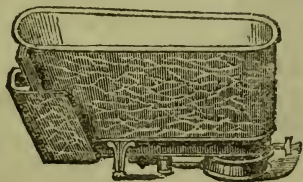
Vapour baths are also employed:—

Tepid	90° to 100° Fahr.
Warm	100° to 115° „
Hot	115° to 140° „

Baths, Right Temperature of.—The right temperature of different baths is as follows:—

Cold	50° to 60° Fahr.
Temperate	75° to 85° „
Tepid	85° to 93° „
Warm	96° to 98° „
Hot	98° to 110° „

Baths, Value of.—The employment of baths as a means of preserving health and warding off disease has been hitherto greatly neglected among the poor generally, and to a less extent among all classes; while their value in regard to both are undoubted, there exists a strange reluctance to employ them for either. In people also who have suffered from bronchitis and other chest affections, a great means of security against cold, and consequently against future attacks of this malady, will be found in the daily employment of a cold or tepid sponge bath. Many who were formerly afraid to go out of doors if the weather seemed cold and stormy, or if it happened to be damp and wet, are enabled, on making use of a morning bath, to do so with freedom and impunity. The general tone of their system is raised, and when the wind blows upon them, they do not feel chilled as they did formerly, but are now able to resist the action of the cold in a way they could not do before. This prophylactic influence of baths cannot be over-estimated, and the effect which they exert both physically and morally is very great; for besides influencing the body for good, they exert a powerful influence on the mind as well, and in the case of children and young people especially this mental effect is of very great importance.



BATH.

Baths used Medicinally.—Many kinds of baths are used medicinally, but it

is sufficient to notice only those which are important and most frequently employed. See SPONGE BATH; SPONGE BATH IN BED; AFFUSION, COLD; SHOWER BATH; COLD BATH; TEPID BATH; WARM BATH; HOT BATH; VAPOUR BATH. To these may be added those baths which are employed when it is wished to act upon special parts of the body, and which have received the name of partial baths. They are the HIP BATH, FOOT BATH, HOT DOUCHE and COLD DOUCHE, which see. There are several other baths which are not so frequently employed as those already mentioned; but which are nevertheless sufficiently well established in domestic medicine to require notice here. They are the BRAN BATH, the STARCH BATH, and the GELATINE BATH. The bran bath is prepared by boiling a pound of bran for a quarter of an hour, straining it and adding it to the bath. The starch bath is made by mixing half a pound of starch or potato-mash in two or three quarts of water; while the gelatine bath is prepared by dissolving a quarter or half a pound of gelatine in a quart of water. These baths are emollient, or soothing, in their action. There are other baths, such as those made with aromatics, which are occasionally employed, but which require no notice here.

Batter Pudding.—Beat up the contents of two eggs with half an ounce of sugar, and mix this with a tablespoonful of wheaten flour and a pint of milk. Put into a basin of boiling water and boil with a cloth tied over it.

Bay or Laurel.—The leaves of this tree frequently enter into the recipes of cookery; but they ought not to be used without the greatest caution, and not at all unless the cook is perfectly aware of their effects. It ought to be known that there are two kinds of bay tree—the classic laurel, whose leaves are comparatively harmless, and the cherry laurel, which is the one whose leaves are employed in cookery. They

have a kernel-like flavour, and are used in blanc-mange, puddings, custards, etc.; but when acted upon by water they develop prussic acid, and therefore but a small number of the leaves should be used at a time. "Before leaving the laurel family," says Dr. Lankester, in one of his lectures on "Food," "I will just remind you that the bay itself yields a fragrant oil both in its leaves and fruits, which are added to flavour various articles of food. Those who have read 'Soyer' attentively—and what housewife who wished to make her home what it ought to be, has not?—will remember how often the prescription occurs amongst his sauces of taking two bay leaves, which of course must be removed before the sauce is served."

Bean-meal.—Unlike pea-meal, bean-meal is seldom used for human food in the present time, although it formerly was often eaten in times of scarcity. Bean-meal is occasionally resorted to in Scotland for mixing with oatmeal or barley-flour for making unfermented bread, which is baked upon a griddle, that many relish; but it is somewhat hard of digestion by ordinary stomachs. The produce of beans in meal is, like that of peas, more in proportion to the grain than that of any of the cereal grasses. A bushel of beans is supposed to yield fourteen pounds more of flour than a bushel of oats; and a bushel of peas eighteen pounds more, or, according to some, twenty pounds more. A thousand parts of bean-flour were found by Sir H. Davy to yield 570 parts of nutritive matter, of which 426 were mucilage, or starch, 103 gluten, and 41 extract, or matter rendered insoluble during the process.

Beans.—One pound of beans will support life in action as long as four pounds of rice. Two pounds of beans will help to do more muscular work than three pounds of wheat, and more brain work than three and a half pounds. The reason why beans require stronger powers of digestion than

wheat is that they contain casein instead of gluten. Beans should be eaten with starchy foods, like rice, or with bacon.

Beans, Haricot (*Fz. haricot*; a contraction, according to Dr. Kitchiner, the author of "The Cook's Oracle," of *hart*, high, or well seasoned, *ragout*, hash or stew, alluding to its use in made dishes of this kind).—As a nutrient vegetable, there are few, if any, so valuable as the haricot bean; but the use of this as food is almost unknown among working men and women in the United Kingdom. "For our labourers," says Sir Henry Thompson, "probably the best of the legumes is the haricot bean, red or white, the dried mature bean of the plant whose pods we eat in the early green stage as 'French beans.' For this purpose they may be treated thus: soak, say, a quart of the dried haricots in cold water for about twelve hours, after which place them in a saucepan, with two quarts of cold water and a little salt, on the fire; when boiling, remove to the corner and simmer slowly until the beans are tender, the time required being about two or three hours. This quantity will fill a large dish, and may be eaten with salt and pepper. It will be greatly improved, at small cost, by the addition of a bit of butter, or of melted butter with parsley; or if an onion or two have been sliced and stewed with the haricots. A better dish still may be made by putting all, or part, after boiling, into a shallow frying-pan, and lightly frying for a few minutes with a little lard and some sliced onions. With a few slices of bacon added, a comparatively luxurious and highly nutritive meal may be made.

"But there is still in the saucepan, after boiling, a residue of value, which the French peasant's wife, who turns everything to account, utilises in a manner quite incomprehensible to the Englishwoman. The water in which dried haricots have been stewed, and also that in which green French beans have been boiled, contains a portion of nutritious matter. The Frenchwoman

always preserves this liquor carefully, cuts and fries some onions, adds them and some thick slices of bread, a little salt and pepper, with a pot-herb or two from the corner of the garden, and thus serves hot an agreeable and useful *croûte au pot*.

"It ought to be added that the haricots so largely used by the working classes throughout Europe are not precisely 'red' or 'white,' but some cheaper local varieties, known as *haricots du pays*. These, I am assured on good authority, could be supplied here at about twopence a pound, their quality as food being not inferior to other kinds.

"But haricots—let them be the fine white *Soissons*—are good enough to welcome at any table. A roast leg or shoulder of mutton should be garnished by a pint boiled as just directed, lying in the gravy of the dish, and some persons think that, with a good supply of the meat gravy and a little salt and pepper, 'the haricots are by no means the worst part of the mutton.' Then, with a smooth *purée* of mild onions, which have been previously sliced, fried brown, and stewed, served freely as sauce, our leg of mutton and haricots become the *gigot à la Bretonne*, well known to all lovers of wholesome and savoury cookery. Next, white haricots stewed until soft, made into a rather thick *purée*, delicately flavoured by adding a small portion of white *purée* of onions (not browned by frying, as in the preceding sauce), produce an admirable garnish for the centre of a dish of small cutlets, or an *entrée* of fowl, etc. Again, the same haricot *purée*, blended with a veal stock, well flavoured with fresh vegetables, furnishes an admirable and nutritious white soup. The red haricots, in like manner with a beef stock, make a superlative brown soup, which, with the addition of portions of game—especially of hare—forms, for those who do not despise economy in cuisine, where the result attained is excellent, a soup which, in texture and in flavour, would by many persons not be distinguishable from a common *purée* of game itself. Stewed haricots also furnish, when cold, an admir-

able salad, improved by adding slices of tomato, etc., the oil supplying the one element in which the bean is deficient; and a perfectly nutritious food is produced for those who can digest it—and they are numerous—in this form. The same principle, it may be observed, has, although empirically, produced the well-known dishes of beans and bacon, ham and green peas, boiled pork and pease-pudding, all of them old and popular but scientific combinations. Thus, also, the French, serving *petits pois* as a separate dish, add butter freely and a dash of sugar, the former making the compound physiologically complete, the latter agreeably heightening the natural sweetness of the vegetable.

"Let me recall, at the close of these few hints about the haricot, the fact that there is no product of the vegetable kingdom so nutritious; holding its own in this respect, as it well can, even against the beef and mutton of the animal kingdom. The haricot ranks just above lentils, which have been so much praised of late, and rightly, the haricot being also to most palates more agreeable. By most stomachs, too, haricots are more easily digested than meat is; and, consuming weight for weight, the eater feels lighter and less oppressed, as a rule, after the leguminous dish; while the comparative cost is very greatly in favour of the latter. I do not, of course, overlook in the dish of simple haricots the absence of savoury odours proper to well-cooked meat; but nothing is easier than to combine one part of meat with two parts of haricots, adding vegetables and garden herbs, so as to produce a stew which shall be more nutritious, wholesome, and palatable than a stew of all meat with vegetables, and no haricots. Moreover, the cost of the latter will be more than double that of the former."

Beans, Haricot, Composition of.—The nutritive properties of haricot beans may be seen from the following table, which exhibits their composition proportionately in parts and weight:—

	In 100 parts.	In 1 lb. oz. gr.
Water.	14.0 .	2 105
Casein, etc.	23.0 .	3 297
Starch, etc.	52.3 .	8 141
Fat	2.3 .	0 161
Cellulose and lignose. .	5.5 .	0 335
Mineral matter . . .	2.9 .	0 203

For one part of flesh-formers in haricot beans there are only $2\frac{1}{2}$ parts of heat-givers, reckoned as starch.

Beans, Windsor.—The broad, or Windsor, bean is, when young, an agreeable and wholesome food. When getting old, the outer skin of the bean is very tough and indigestible, and should not be swallowed. In nutrient properties it is nearly as valuable as the haricot bean, but by no means as palatable if used in its dry state. This does not apply to the seed of the kidney or runner bean, which, whether white or coloured, is excellent when cooked and eaten as haricot beans.

Beard, Length of the.—The beard has been known to attain great length; and the story is told on good authority of a carpenter whose beard measured nine feet in length, he carrying it in a bag when at work; also of another individual, a bargo-master in Holland, whose beard was so long that he was obliged to fold it up when moving about, and, having failed to do so on one occasion, he trod on it when ascending a staircase, and was thereby thrown down and killed.

It has been estimated that a man by shaving the beard removes between six and seven inches in the course of the year; so that a man eighty years of age will have removed not less than twenty-seven feet of beard during his life.

Bed.—As so much of our short lives is spent in bed, it becomes a question of importance what sort of bed is best. There are writers on hygiene who agree that to be healthy a man should live on "hard tack" and sleep on the soft side of a plank, but the weight of authority is in favour of a

little more comfort. In former times it was considered a great luxury to possess a feather bed; of late years, however, feathers have fallen into disfavour, and mattresses filled with wool, hair, or other materials are substituted in their stead. The age and vitality of the person who has to lie in the bed has much to do with the settlement of the question. Thus, for the young and healthy, the mattress is perhaps the more desirable; but for old people, whose vitality is low, and who therefore *per se* do not generate and throw off much animal heat, a feather bed on top of the mattress is preferable.

Bed, Going to, in Winter.—In freezing winter-time do not go to bed in a hurry if there is no fire in the room, and there ought not to be unless you are an invalid. But if a person is not in good health, it is best to undress by a good fire, warm and dry the feet well, draw on the stockings again, run into the room without a fire, jump into bed, bundle up, with head and ears under cover for a minute or more, until you feel a little warmth; then uncover your head, next draw off your stockings, straighten out, turn over on your right or left side, and go to sleep. If a sense of chilliness comes over you on getting into bed, it will always do you an injury; and its repetition increases the ill effects, without having any tendency to harden you. Nature ever abhors violence. We are never shocked into good health. Hard usage makes no garment last longer.

Bed in Lying-in Room.—See LABOUR, PREPARATIONS FOR.

Bed-Sores.—There is a strong analogy between what professional men denominate *bed-sores*, and the severer cases of bruise. When a patient is long confined in the horizontal position in fever, or other acute disease, where the strength becomes so reduced that the poor sufferer is incapable of sustaining any other than the recumbent position, it is not uncommon for some spot about the buttocks, or at the bottom of the back, to assume the appearance of a bruise;

and, in consequence of the low state of the vital powers, the part soon dies, the subjacent cellular substance also sloughs, and frequently the most extensive bed-sore is the consequence. Long-continued pressure on the part may be considered as one of the exciting causes, and this constitutes the analogy between bed-sores and bruises; but we must proceed to say that this consequence occurs but rarely, unless also, from unconsciousness in the patient, or unpardonable negligence in the attendants, or both combined, the part is allowed to be frequently, and to remain long, wet with the natural excretions of the body, which irritate the skin even when sound, but much more so when previously bruised or excoriated by continued pressure.

Preventive means should be taken in every case of long-continued confinement to bed, and particularly where the patient, either from disease or from great age, is not at all, or but slightly, conscious of the calls of nature. Alteration in position, or removal from one bed to another, should be persevered in as long as practicable, frequent renewal of dry clothes, and, above all, sponging with warm water, and carefully drying with soft linen afterwards, must never be omitted in such cases. As soon as any part of the skin is excoriated by the long-continued pressure, or if it only looks more red, and is become tender, the part must be defended by the application of diachylon or soap-plaster spread on soft leather; and the plaster must always be sufficiently large to cover much more than the excoriated part, otherwise the edges of the plaster, by irritating the already tender skin, would increase the mischief. Remember this axiom, that almost every sore of the description now under consideration is the consequence of neglect. Be vigilant, therefore, where this is more likely to occur; neglect not to inquire frequently into these matters, urge the attendants continually to do their duty, and remonstrate where necessary. When the mischief has occurred, poultices must be applied, and frequently renewed. Warm spirits of wine and cam-

phor, or warm brandy sprinkled over the poultice, will excite the action of the vessels, and tend to check the further progress of the mischief. Some surgeons have extolled yeast poultices, or have recommended the grounds, or lees, of beer to be applied as poultices in such cases. Of whatever your poultice consist, it is of much moment that it be warm, and often renewed. If there is much fœtor, cover the part first with rag dipped in a solution of chloruret of lime, or of chloruret of sodium, and apply the poultice over this; when the sloughing has taken place, treat it as any other sore, always bearing in mind that the general debility requires a nutritious diet, and the irritation demands the occasional use of opiates, if the peculiarity of the attendant disease does not forbid their use.

Bedding.—Mattresses and pillows should equally be exposed to the air, and if possible to the sun, daily. The bed must not be made until an hour or more after its incumbent of the night has left it, and its internal surfaces have, by a due scattering and turning of its contents, been well exposed to the fresh air and clear daylight from the open windows. The offensive and injurious odour which is frequently perceived about pillows, is due to imperfect preparation of the feathers; they have not been properly cleansed, and if examined would be found oily, and containing particles of organic matter, and small insects and worms alive and dead. Steaming, drying, and re-making is the only remedy.

Beds, Damp.—See DAMP BEDS.

Beds for Children.—The kind of bed and its arrangement are very important in regard to their influence upon the sleep of the child. The chief points to be considered are their adaptation to the natural needs as to warmth, respiration, transpiration, and position of the healthy body. The infant, for security, is often put to sleep in a crib, and this, if made with open sides, to allow of a free circulation of air, is unobjec-

tionable. It should be entirely naked of curtains, and so constructed that all parts of it and its contents may be accessible for airing and cleansing. The mattress of horse-hair is the best to lie on, for it gives all the required warmth, while it admits of the passage and evaporation of the natural moisture and vapours of the body. It is, moreover, in consequence of its porousness, easily dried, ventilated, and purified. Its elasticity gives it the further advantage of yielding easily to the pressure and movement of the body, while its ready return to its original form prevents any inequality of surface which might cramp the frame and limbs and tend to disturb them permanently.

The feather bed, which has none of these good qualities of the horse-hair mattress, should never be used, at any rate, for children to lie upon. It is advisable even to adopt hair instead of feathers for the pillow, as the latter is apt to be too heating for the head of the child, which has often a great tendency to an excessive sweating.

The pillow should be always of a sufficient width to support the shoulders as well as the head, and never so high as to raise the latter inordinately. A careful attention to the position, in this respect, of the sleeping child is of great importance, in regard not only to his present health, but future grace of proportion. Any interference with the free respiration of the child must be carefully guarded against by a proper arrangement of bed, pillow, and coverings.

Bedroom, Choice of, for Labour.

—See LABOUR, PREPARATIONS FOR.

Bedroom, The Child's.—The larger portion of infant existence is passed in sleep, a great abundance of which is absolutely necessary to the proper development of the child in all the early stages of its life. There is hardly a single hour, out of the whole twenty-four, that an infant may be said to be wide-awake. This lengthened slumber being a natural want, and an

essential condition of the vigorous growth and sound health of the young, must be encouraged by all the means known to be conducive to wholesome repose.

It should never be forgotten that sleep does not withdraw the human being from subjugation to any of the laws which govern health and life during wakefulness. Awake or asleep, he is always the same thinking, feeling, breathing, digesting, and moving animal, and requires for the proper action of these various processes of life similar conditions of relation to the external world. The brain thinks, and all the senses receive impressions during sleep; for even the closed eye will open to a sudden glare of light, the lungs respire with undiminished force, the organs of digestion stop not in their work, and the muscles continue to act.

Purity of air is just as essential to the healthy respiration of the sleeping as of the wakeful person, and the requirements of the dormant infant are greater in the proportion of its more abundant slumber. The bed-chambers therefore, especially of the very young, should be of a kind to secure a plentiful supply of fresh air. They must be spacious in every direction, of lofty ceilings, and good length and breadth. The sleeping infant, stifled with wrappings of divers sorts, is often deposited in dark contracted enclosures, into which no more light or air enters than into a sealed tomb.

No room without windows is a fit resting-place for a sleeping child, and these need never be wholly closed when there is a proper provision, as there should be, for warming in winter the bed-chamber in common with the rest of the house. The temperature should never be less than 60° Fahrenheit; any excess beyond this may be easily checked by means of the windows, the free opening of which, at all seasons, may be regarded as not only safe but beneficial, when draughts are avoided, as they can easily be by keeping the doors shut if the windows are open, or *vice versa*.

The sleep required by a very young infant is almost of an indefinitely large quantity,

and its instinctive disposition to indulge in it should never be interfered with, but on the contrary greatly encouraged. By having the bedroom at a sufficient distance from the nursery—which, with a fair average number of vivacious little occupants, cannot, and ought not to be the special domain of silence—the necessary quiet for sleep may generally be secured. A child should never, if possible, be aroused from its natural slumber. Tender mothers should check a fondness which prompts them to such kisses and caresses as are likely to disturb their infant's repose. Maternal pride, too, which often impels to an exhibition of infantile beauty and grace at all times to every admiring visitor, should forego this indulgence whenever baby is asleep.

Porous materials of wool are the best for the outer coverings of the bed, and cotton, a more healthful stuff than linen, for the interior. No padded quilts of patchwork should ever be used. (*See also* NURSERY, THE CHILD'S.)

Bedroom, Ventilation of. —

Though the want of pure air is favourable to stupor, an abundant supply of it is requisite for healthful sleep. It is particularly desirable, therefore, that the bedroom should be spacious and well ventilated. It has been estimated that three thousand cubic feet is the smallest breathing space to be allowed to two occupants of a bedroom, which should thus have the dimensions of twenty feet in length, fifteen feet in width, and ten feet in height. This, then, is the minimum to which contraction is permissible. The maximum may be extended almost as far as the command of space will allow. Large sleeping apartments are undoubtedly very favourable to health.

The desire for free respiration during sleep leads many people to secure an abundant supply of fresh air by leaving a window, communicating with the atmosphere without, open during the night at all seasons. This is a practice, as is proved by the experience of many a vigorous veteran, favourable to health and long life. If there should

happen to be a second room communicating with the bed-chamber, it would be well that it at least should have a window open during the whole night. Of course draughts are to be avoided; but these are prevented by a proper arrangement and opening of the doors and windows in relation to each other. Almost any degree of cold in the bedroom will be safe while the sleeper is warmly nestled beneath his blankets.

In the case of children and young persons predisposed to consumption, it is of urgent consequence that they should breathe fresh air by night as well as by day, by securing a continuous renewal of air in their bedrooms and nurseries. Let a mother, who has been made anxious by the sickly looks of her children, go from pure air into their bed-



VENTILATION WITHOUT DRAUGHT.

rooms in the morning before a door or window has been opened, and remark the state of the atmosphere—the close, oppressive, and often fetid odour of the room—and she may cease to wonder at the pale, sickly aspect of her children. Let her pay a similar visit some morning after means have been taken, by the chimney, ventilator, or otherwise, to secure a full supply and continual renewal of the air in the bedrooms during the night, and she will be able to account for the more healthy appearance of her children, which is sure to be the consequence of supplying them with pure air to breathe.

If we sleep in a close room, the carbonic acid which escapes from the lungs at each expiration is absorbed by the moisture of the breath, and uniting with other impure

gases which are always found in close rooms, becomes heavy and settles on the floor, especially if the apartment is cold; hence the nearer the floor we sleep in cold weather, the more injurious is the air we breathe.

We should be all healthier if our chambers contained nothing but a chair, a table, a bed, and a strip of woollen carpet at its side; for curtains and furniture gather dust and dampness, and harbour poisonous emanations.

Beef. — Bull-beef is rarely eaten, on account of its dry, tough, and indigestible nature; but the flesh of the ox, called ox-beef, is a highly nourishing and wholesome food, readily digested, when fresh, by healthy persons, and constituting a principal part of the common diet of the inhabitants of this and many other countries. It is the most strengthening of all kinds of animal food, and is almost the only species of such food that is in season throughout the year. Cow-beef is not so tender, nor so nourishing, nor so digestible as ox-beef.

Beef-Tea. — Either of the following recipes will be found reliable in making beef-tea. (1) After removing all skin, fat, and gristle, from a pound of rump steak, cut it into squares, and put it into a large-mouthed bottle, add a little salt, and, having corked it tightly, put it into a saucepan with cold water, and allow it to boil for six hours. Skim, strain, season, and serve hot. (2) Take a pound of beef, and having minced it fine, put it into a common earthenware teapot, with a pint and a half of cold water. Place the pot upon the hob, and allow it to simmer for at least three hours. Thus about three-quarters of a pint of good beef-tea will be obtained. Although beef-tea contains only a small amount of solid nitrogenous matter, each pint of it, as ordinarily made, containing "scarcely a quarter of an ounce of anything but water," it nevertheless is possessed of great nutrient power in sickness. Added to other articles of diet, beef-tea greatly augments their power,

Beef-tea made as directed above is far more nutritious and palatable than any of the various extracts now so widely sold and used as substitutes for it.

Beer.—A form of alcoholic beverage made from the fermentation of roasted germinating grain. When a seed begins to germinate, its starch is converted into sugar. By roasting, the process of germination is arrested, and the dried grain, under the name of malt, is used for making beer. The flower of the hop is added before the fermentation is commenced, and a bitter taste and tonic quality is given to beer which is not possessed by wines or spirits. Hence, medicinally, beers act as stimulants and tonics. Beer is sold, according to the way it is made, under various names. Thus, we have ales, porter, and stout. Ales are mild, strong, and bitter. Mild ales contain from half an ounce to an ounce of alcohol in the pint, and are most recommended as ordinary articles of diet. Strong ales contain from one ounce to an ounce and a half of alcohol in the pint, and ought only to be used when the stimulant effects of alcohol are required. Bitter, pale, or Indian ales contain from one to two ounces of alcohol, and have a larger quantity of hops than either mild or strong ales. Porter and stout are brewed with over-roasted or blackened malts, and thus get a dark colour. London porter contains from three-quarters of an ounce to an ounce of alcohol in the pint, whilst stout contains an ounce and a half. All these beers are bottled for sale. The only difference bottling makes is that the carbonic acid gas liberated during fermentation is kept in the bottle and passes out mixed with the beer. In some cases this carbonic acid has apparently the power of assisting digestion, and, as a matter of experience, is preferred to draught beer. In some states of the system beer is a most objectionable article of diet. The unfermented saccharine matter undergoes changes in the stomach which is said to communicate certain properties to the blood favourable to the generation of such diseases as rheumatism and gout. When

these diseases are not produced, there is a general condition of the system brought about in which attacks of serious disease are rendered much more liable to a fatal termination than they otherwise would be.

The water used for brewing should be free from all injurious impurities, and especially from any organic matters undergoing change. There is one mineral substance, however, which exerts a decidedly beneficial effect upon beer, both during the progress of brewing and on the finished product; this mineral substance is sulphate of lime, or gypsum. When the water employed for brewing is deficient in this compound, it is supplied by passing the water over blocks of this mineral, or by stirring in the sulphate of lime in the form of fine powder or crystals.

The chief compounds which exist in beer are the following:—

1. Alcohol, or spirits of wine, from 1 to 3 per cent.
2. Dextrin, about 4·4 per cent.
3. Albuminoids, about 0·5 per cent.
4. Sugar, about 0·5 per cent.
5. Acetic, lactic, and succinic acids, about 0·3 per cent.
6. Carbonic acid gas, about 0·15 per cent.
7. Mineral matter, about 0·28 per cent.

The habitual beer-drinker, generally speaking, has a worse appetite, loses his sight earlier, has less power of recovering from bodily injuries, and dies earlier than he who drinks nothing stronger than water, tea, and coffee; but this is due to the abuse of beer and the undue consumption of so-called beer that contains drugs and other adulterations. Beer which is the genuine product of good malt and hops, taken in moderation, will hurt no one, and is certainly not so harmful to the digestion, if harmful at all, as strong tea taken frequently and in quantities.

Beer, Spruce.—See SPRUCE BEER.

Beets.—Beets contain a considerable percentage of sugar, and are therefore nutritive, but they are only of value in connection

with other food. The garden beet contains almost as much sugar as the best sugar beet, which is so extensively grown for making sugar in France, Belgium, Germany, and other countries. Roots of garden beet contain—

	In 100 parts.	In 1 lb.	
		oz.	gr.
Water	82·2	13	67
Albumen	0·4	0	23
Sugar	10·0	1	262
Pectose	3·4	0	233
Fat.	0·1	0	7
Cellulose and lig- nose	3·0	0	210
Mineral matter .	0·9	0	93

The geographical distribution of the order Saltworts (*Salsolaceæ*), to which beetroot belongs, is most common in extra-tropical and temperate regions, where they are com-



BEETROOT.

mon weeds, frequenting waste places, among rubbish, and on marshes by the sea-shore. In the tropics they are rare. They are characterized by the large quantity of mucilage, sugar, starch, and alkaline salts which are found in them. Many of them are used as pot-herbs, and some are emetic and vermifuge in their medicinal properties. The root of garden, or red, beet is exceedingly wholesome and nutritious; and Dr. Lyon Playfair has recommended that a good brown bread may be made by rasping down this root with an equal quantity of flour. He says that the average quality of flour contains about 12 per cent. of azotized prin-

ciples adapted for the formation of flesh, and the average quality of beet contains about 2 per cent. of the same materials.

Best Time for Walking.—See WALKING, BEST TIME FOR.

Bicuspids.—See PERMANENT TEETH.

Bile (*Lat. bilis, bile*).—The bile is secreted in the liver, and is conveyed by innumerable little tubes to what is called the hepatic duct, through which it passes on its way to the duodenum. From the gall bladder, or *cyst*, as it is sometimes called, proceeds also a duct, called the *cystic duct*, which unites with the hepatic duct between the liver and the duodenum about four or five inches from the pyloric orifice.

Bilious Complaints.—"The disorders of the liver," says Dr. Graham, in a passage not yet out of date, "have attracted so great and unreasonable a degree of attention, both from the profession and the public at large, that it is exceedingly common for almost all complaints subsisting within the abdomen to be resolved into some irregularity or deficiency in the secretions of that organ; and as by far the greater number of disorders found among civilized men, whether local or general, originate or centre in the aberrations of the important organs of digestion, and are most readily cured by the employment of remedies which have the power of bringing them again into a healthy state, the prevailing opinion of the paramount influence of the bile over the well-being of our whole frame has appeared so well founded as to have gained almost universal belief, and the terms *bilious* and *liver* complaints are, consequently, become fashionable, and are freely employed by persons of every rank and condition.

"But this prevailing opinion has no real foundation in truth. The liver is, indeed, a large organ, and it is, unquestionably, of some consequence that its secretion should be healthy and in proper quantity; but, though large, it possesses only a faint sensi-

bility and a very imperfect organization when compared with what we find in the stomach and bowels, and the use of the bile which it secretes is by no means clear. On the contrary, the digestive canal (that is, the stomach and bowels) has an exquisite sensibility, and most delicate structure; the value and use of its secretions are great and unequivocal; and the sympathy which it exerts in its functions over other parts of the body is striking and universal." From these facts the present author concludes that the liver is a viscus of inferior moment, and that those maladies which are now so generally called bilious and liver complaints are, in reality, disorders of the stomach or bowels, or both. If the existing evil be obstinate, and attended with pain in the right side, it is common to call it "*liver complaint*"; if less severe, "*bilious*." But by far the greater number of both these cases are examples of *indigestion*, dependent upon an unhealthy condition of the digestive tube; and thus the author hopes his readers will constantly view them, knowing, from sufficient observation and experience, that as such they are invariably most safely and successfully treated.

For the treatment of bilious complaints the reader is referred to the remarks made on indigestion. But whether these prevailing maladies are considered bilious or stomach complaints, it is *certain* the administration of much mercury is never necessary and always hurtful. A little calomel, or blue pill—for example, one grain of the former, or four or five grains of the latter—is frequently of service; but beyond this they are seldom safe.

Some persons troubled with bilious affections are in the habit of taking calomel pills for the removal of their disorder; others have frequent recourse to emetics or purges. Both these measures are wrong in principle and bad in practice. They are wrong in principle, because those complaints necessarily imply the existence of weakness and disorder in the stomach and bowels,—in other words, of deficient and irregular action,—and such means are not calculated to remove the

former nor correct the latter; and they are bad in practice, since both calomel and emetics, when frequently repeated and long continued, cannot fail to aggravate and confirm the evil they are intended to cure. They often afford present relief, we allow; but that very relief is but a prelude to another attack, from the inefficacy of the means employed and the increase of weakness they have occasioned.

In bilious disorders great attention should be paid to diet and regimen, and the region of the stomach and bowels should be well rubbed, twice a day, with the flesh brush. A tepid bath, at 95°, three times a week, is often useful, and daily exercise in the open air must not be neglected.

Bilious Fever.—This is another name for remittent fever, a disease which has its origin in malarial poisoning.

Bilious Fever, Symptoms of.—

The symptoms of bilious fever resemble those of intermittent fever or ague (see AGUE), with this exception, that there is no cessation of fever, but just a diminution or abatement. The length of the remission varies from six to twelve hours, the remission ordinarily taking place in the morning. Bilious fever may last for fourteen or fifteen days, and terminate in an attack of sweating, or it may merge into low fever.

Bilious Fever, Treatment of.—

The first thing is to diminish the fever by giving the patient cold drinks, sponging the body with cold water, and acting mildly on the bowels by means of cream of tartar water. Ten grains of quinine should be administered during the remission. Should the patient be much depressed, let him have raw eggs, nourishing broth, and stimulants. The treatment of remittent fever should always be entrusted to a physician. The same course should be pursued in convalescence as in intermittent fever, and care should be taken to prevent a relapse. To provide against this the patient should continue to take Peruvian bark for some time after

his recovery. He should also limit himself to a simple diet, avoiding confections and all sorts of flatulent food.

Bilious Temperament (*Lat.* *tempero*, I mix in proper proportions; from *tempus*, time).—The bilious temperament is shown by strength and rigidity of the whole system. Strongly marked features, with dark complexion, hair, and eyes. The pulse is strong, but not quick; the manner decided; and the mind tenacious of purpose.

Biliousness, Homœopathic

Treatment of.—For an ordinary bilious attack, which frequently follows indulgence in what is called good eating and drinking, and is often the outcome of sedentary occupations, the usual remedies are *Mercurius* and *Nux Vomica* in alternation, in doses of 1 drop of the tinctures in a tablespoonful of water every two hours till relief is obtained. *Pulsatilla* is prescribed for persons of fair complexion, especially women, instead of *Nux Vomica*. The ordinary symptoms of such an attack are a foul tongue, with nausea, and frequently actual vomiting.

Bill of Fare, Universal.—"If I were forced under the penalty of my life," says an American physician, "to indicate a short bill of fare that would be suited to all climates; which, with least liability to overtax or undertax the organs of digestion, should diminish the delicacy of the weak and increase the strength of the strong; which should contain all the needful elements of nutrition, and be equally adapted for breakfast, dinner, tea, or lunch; which should sustain the brain-worker alike with the muscle-worker, and be the longest to pall on the taste of any, I should name the following:—Tender beef-steak, fat and lean, broiled; roast potatoes; baked wheaten flour bread, stale and light; butter; a cup of weak tea.

Binocular Vision (*Lat.* from *binus*, double, *oculus*, eye: *visio*, act of seeing; from *visus*, seen, from *video*, I see).—The

simultaneous use of both eyes is called "binocular vision," and to secure its correct and full effect the eyes must have nearly the same acuteness of vision and degree of refraction, and the action of the external muscles must be so balanced that both eyes may be properly directed to the same object. There are, of course, two images formed of every object that we look at, one on each retina, and they are so combined by the brain as to give the impression of one object only, when they fall on what are called corresponding parts of the two retinæ. The principal advantages of binocular vision are in the appreciation of the solidity (the "three dimensions") of objects and in the accurate determination of distance.

We are greatly assisted in the estimation of distances by the simultaneous use of both eyes, for each eye gives accurately the *direction* of the object, and we know that its position must be at the intersection of these lines of direction. Persons who have lost one eye are much inconvenienced by the want of this assistance, as may be appreciated by attempting to thread a needle, or to touch a spot on paper with the point of a pencil quickly, with one eye closed.

In looking at an object closely, the eyes are turned towards it, or *converged*, by the action of the internal straight muscles—another muscular effort involved in near vision, which is far from being the merely passive sensation that it is too often considered.

Birch Wine.—This home-made wine is of a thin acidulous nature, somewhat resembling Rhenish wine. It is much recommended in gravel complaints and a vitiated habit of body; and it is improved in its diuretic quality by the addition of a small proportion of honey. It is frequently used as a gargle in sore throats, and is the most inoffensive of all the made wines.

Birds as Food.—Next to the flesh of mammalia, that of birds is most consumed as food by man. Several species are do-

mesticated in this country, and used as food, whilst a larger number of wild birds are consumed. About thirty species are thus commonly used in Great Britain. Upwards of 170 species have been recorded as eaten by man in various parts of the world. The flesh of birds has not been so carefully analysed as that of the mammalia. It contains, generally, more of the principle, creatin, and this is especially the case with wild birds. Young birds contain albumen and gelatine, while older birds contain fibrine. The flesh of birds contains but little fat: this is more especially the case with wild birds. Domestic fowls are fattened, more especially in the form of the capon. The goose and duck become fat by abundant feeding in domestication. The flesh of birds presents a greater variety of flavour than that of any other class of animals. As a rule, the flesh of carnivorous birds has a stronger flavour than those which are herbivorous or graminivorous.

It has been said that the flesh of birds is characterised by the almost entire absence of fat. When much fat is present the flavour of the meat is often less delicate, and its digestibility, especially when roasted, decidedly difficult. It does not seem that game, even when "high," and therefore to some extent decomposed, is really unwholesome, when the birds are properly cooked.

Of birds, the following species afford excellent nourishment, and are, for the most part, easily digestible, *viz.*—the common fowl, pheasant, and partridge; the turkey, guinea hen, and quail; the common pigeon, lark, and fieldfare. The flesh of the young rook is very similar to the pigeon, but is rather inferior in flavour and digestibility. A pie of young rooks, however, is a dish by no means to be despised. The woodcock, the snipe, the great plover, and the lapwing furnish very good and savoury food. The swan, the goose, the widgeon, the teal, and the wild and tame duck are nourishing and wholesome for occasional food, but they are not very easy of digestion.

Birth of Child, What should be done at.—As it sometimes happens, especially in the case of those who reside in the country, and at some distance from medical assistance, that the child is born before the doctor has had time to be sent for, it will be well for those who are in attendance to know how to act in the meantime. It is desirable, therefore, to lay down a few plain rules for the guidance of those who may at any time be thus awkwardly situated.

As the head is being born, one of the attendants should place her left hand upon the patient's belly and grasp the womb. The object of this is that she may be able to follow it as it contracts and expels the child, and when the infant is born that she may keep hold of it until the arrival of the doctor, or, at any rate, till the after-birth has come away. Unless this simple precaution is attended to, the patient may suffer from flooding, and her life be thus endangered.

When the head is born, one of the attendants should place her hand upon the child's neck and feel if there be any coil of cord round it; and if there be it ought to be pulled upon, so as to loosen it, or it may be removed from the neck altogether. It is very important that this should be attended to without delay, as the child may be very easily strangled if the cord is wound tightly round the neck.

Having ascertained that everything is right, that there is no coil of cord about the neck of the child, the right hand of the attendant should be placed under the infant's head to direct it forwards as the body is born, which will generally be in a few seconds after. In case there should be anything lodging in the child's mouth which would be likely to interfere with the breathing, the finger of the attendant should be introduced into it, and anything that may be there removed. Frequently the mouth of the infant is filled with mucus, which may prevent it breathing freely; but if this simple proceeding be resorted to, the mucus may be at once removed.

On the child being born, if strong and

healthy, it will generally begin to cry. If, however, instead of crying it remain in an apparently lifeless condition, efforts must be made as speedily as possible to cause it to breathe. For this purpose the child should be smartly tapped upon the buttocks, back, or chest, which will, in many instances, have the desired effect of bringing it round. Should this procedure, however, not have the desired effect, what is called *artificial respiration* must be had recourse to.

Artificial respiration may be performed as follows:—The hands of the infant are seized by the attendant and raised from the side until they are lifted above the child's head as far as they will go, by doing which the act of inspiration or drawing of air into the chest is imitated, after which the hands and arms are to be depressed until they are brought to the side again, by which the air will be driven from the chest, and the act of expiration be thus imitated.

Rubbing the chest and back with equal parts of brandy and water may also be tried in cases of this kind. Suppose, however, that the child has been born, and that as soon as it comes into the world it begins to struggle and kick violently, what is to be done? If the medical attendant is likely to arrive presently, the infant's head should be turned towards the end of the bed, so as to be away from the discharges, and the bed clothes so arranged as to admit of a plentiful supply of air. Beyond this nothing need be done in such cases.

If, however, it is uncertain when the doctor may arrive, or if it be in the country, where the presence of skilled assistance cannot always be calculated upon when wanted, it will generally be necessary to divide the cord, and thus sever the child from its connection with the parent. This may be done in the following manner:—The cord being taken up in the left hand, a piece of tape, several strands of whity-brown thread, or two or three thicknesses of yarn, are passed round it and tied in a double knot about the distance of three fingers' breadths from the navel.

A second ligature should then be placed about an inch and a half nearer to the mother, and midway between these two ligatures the cord is to be divided. The application of this second ligature is not absolutely necessary in the great majority of cases, but it is always better to apply it.

This having been done, the child is to be placed in the flannel receiver and removed to a secure place. This should not be an arm-chair, or other place of a like nature, where the child runs a risk of being injured through the carelessness or forgetfulness of those in the room. Further attention must now be directed to the mother. The first question which naturally suggests itself on turning again to her is, "What of the after-birth! Is it to be removed, or should it be allowed to remain?" The answer to this is, that "the less the attendants interfere with the after-birth the better."

Any rash attempts at removing it by pulling upon the cord may be followed by severe flooding, or by breaking of the cord, the after-birth remaining in the womb. Frequently, indeed, the after-birth comes away a short time after the child is born, the same pain that brings about the expulsion of the latter giving rise to the loosening of the former, so that on the recurrence of the pains after a short period of rest it is frequently expelled. Sometimes, also, the same pain which caused the birth of the child expels the after-birth, which follows upon the infant's heels.

Should it not come away by the normal contractions of the womb, no attempt is to be made to remove it. The hand of the attendant, which has been grasping the womb, must not be relaxed, but should be kept there incessantly until the arrival of the medical attendant. This pressure by the hand over the lower part of the belly upon the womb is a great safeguard against the occurrence of flooding, and frequently will be found of assistance in causing the expulsion of the after-birth. Care must be taken in removing the child from the bed, that in lifting it a sufficient hold is obtained.

It sometimes happens that by the careless manner in which children are lifted they fall, and are seriously bruised and injured. The way in which a child can be best lifted is by taking the back of his neck between the thumb and forefinger of the right hand, and allowing the buttocks to rest upon the palm of the left. In this manner the child may be lifted with perfect security and placed in the receiver. (*See also*, CHILD, TREATMENT OF, AFTER BIRTH.)

Birth of Child, Undue Interference at.—"Nurses," says an American writer, "who have a wonderful opinion of their own importance, and seem to think that their aid is essential, not only to the creature, but to the Creator, will often insist upon having a share in His work. They thus, in their hurry to do something, will begin their operations upon baby with a vigorous spanking, and the little being's first impression of this world comes from the hand of the oppressor. The nurse is conscious that the cry of the infant is good for it in some way, though she is ignorant in what. She probably supposes that, like a noisy squall at a christening, it sometimes brings luck. Her rude interference with nature, however, is cruel and unnecessary. If, with more patience and less inclination, to intrude her busy finger, she waited a little, she would find that baby, requiring no spanking at her rough hand, but only the gentle touch of the soft air, would soon give a volley of cries loud enough not only to satisfy the demands of fortune, but the more essential ones of nature."

Births, Relative Number of Sexes in.—As regards the relative number of the sexes born, the average for Europe gives 106 boys for every 100 girls. Further, according to researches made both in this country and in Germany, on the influence of the age of parents on male and female births, it is found that, in general, when the mother is older than the father, fewer boys than girls are born. The same is the case where the parents are of equal

age; but the more the father's age exceeds that of the mothers, so is the ratio of boys greater.

Biscuit (*Fr. biscuit*: from *Lat. bis*, twice; *coctus*, cooked).—Biscuit, though in its composition closely allied to bread, presents some peculiarities. It is unleavened bread; and has consequently not undergone the panary fermentation. It is highly dried, by which it is rendered fit for long keeping: this is, perhaps, its greatest advantage. It is supposed that its dryness and freedom from fermentation render it desirable for those troubled with bad digestion; but its virtues in this respect are overrated. Biscuits are most digestible when not very dense, and when they have been browned by baking, so as to convert much of their starch into dextrine. The word "biscuit" as shown above, means twice cooked or baked, and is not applicable to the generality of biscuits now made. Some biscuits, however, have really been twice in the oven; rusks, for example, which are made from flour, milk, butter, and sugar, first baked as a sort of bread, then cut in slices and again put into a sharp oven, so as to scorch the outside. Afterwards they are thoroughly dried by a lower degree of heat, continued for some hours.

Biscuits, Abernethy.—Abernethy biscuits are made variously by different bakers—most of whom add a little yeast, and flavour with caraway-seeds.

Biscuits, Captains'.—The captains' biscuits of the ships are generally made of fine flour with a small proportion of butter.

Biscuits, Fancy.—In the numerous fancy biscuits now used, butter, milk, sugar, and the like are indispensable ingredients; and for this reason little definite or favourable can be asserted of their dietetic properties.

Biscuits, Powdered.—Biscuit-powder, being nothing more than biscuit crushed

and reduced to this state by pounding in a pestle and mortar, or similar means, do not require mastication, and being prepared for use with hot water, is reckoned fair food for infants.

Biscuits, Sea.—Sea biscuits, so largely employed in the victualling of the navy, are composed of wheaten flour and a little bran; they are hard and heavy, and are difficult of mastication.

Bites of Animals.—Bites from animals with sharp teeth, as fishes, cats, and some other animals, partake of the nature both of punctured wounds and incised wounds, and are sometimes termed lacerated wounds. The treatment must partake more or less of that recommended in each, as it is found to assimilate more or less with one or the other. Where the pain is more of that character termed aching, rather than smarting, fomentations and poultices will afford most relief.

Bites and Stings of Insects.—The bite of certain insects and reptiles, and the sting of others, as well as the sting from certain plants, are also punctured wounds, but with the addition of a poison introduced into the wound. The latter circumstance accounts for the succeeding inflammation being so disproportionate to the wound, and which, in certain irritable constitutions, runs high, and requires constitutional treatment. In all cases of sting or bite, it is a good plan to suck the part perseveringly, whenever it can be done, by which means the absorption of the poison into the circulation is suspended or prevented, and the warmth and moisture thus applied act as a fomentation to the part. It is a fact pretty generally known, that no mischief ever ensues from the poison thus entering the stomach of the person who sucks the wound, not even the poison of the viper, which is the most virulent of British animal poisons, or even that of the rattlesnake of other climes. For the sting of a bee or wasp, an onion cut in half and rubbed on the place will relieve

the pain and subdue the swelling. Ammonia and dabbing with the blue-bag are also efficacious, and the former especially for the bites of gnats and mosquitoes. Sweet oil, taken internally and rubbed in externally, the limb being held near the fire or over a chafing-dish of hot coals, is an antidote to the poison of a viper, and possibly for all snake-bites. For insect bites and stings the application of a mixture of 1 part of menthol in 10 parts of alcohol is also recommended. (*See also* INSECTS, STINGS AND BITES OF.)

Bitters.—Bitters, which consist of Columba-root, gentian, orange peel, and the like, infused in spirit, are sometimes made use of to procure appetite. The ingredients possess properties which are valuable when judiciously applied medicinally; but if they are taken in this combination, the stomach is soon familiarized with the stimulus, and will not perform its office without it.

Blackcock.—*See* BIRDS AS FOOD.

Black Draught.—*See* DRAUGHTS.

Black Hole of Calcutta.—*See* OVERCROWDING, DANGER OF.

Black Vomit.—*See* YELLOW FEVER.

Blacksmiths, etc., Disease Peculiar to.—The robust activity of the blacksmith and carpenter do not exempt them from the general law. They are liable to a disease called "hammer-palsy," affecting the muscles which are overworked. It is occasioned by the jarring of the muscles of the arm by the constant use of the hammer.

Bladder, Urinary (*Anglo-Saxon, blædre, a blister; urina, fluid secreted by kidneys*).—The urinary bladder is the receptacle for the urine after it has been secreted by the kidneys, and previous to its discharge from the body. It is an oblong membranous bag composed of three coats or layers, the middle one being muscular,

and is situated in the pelvis just behind the pubic bone, rising, however, when much distended, into the abdomen. In the male subject, at the neck of the bladder is situated the prostate gland.

Bladder, Irritability of.—The bladder affections from which the pregnant female is liable to suffer are those of irritability, incontinence, and retention.

The distressing condition of irritability is of frequent occurrence during pregnancy. In the early months it appears to be of sympathetic origin, while later on it is the result of the mechanical pressure exerted by the enlarged womb upon the bladder. If allowed to go unrelieved, it may seriously impair the general health by the continual disturbance of rest to which it gives rise. Much relief will be afforded to those who suffer from this affection by the free use of barley-water as a drink, and by taking, at bed-time, a pill composed of three grains of the extract of henbane and two of extract of gentian. Other means may be employed, but should these fail medical advice had better be sought. Mild laxatives must be administered from time to time, so as to keep the bowels acting freely.

Blancmange.—*See* GELATINE.

Blankets.—Wool, which, within its loose and porous structure, always contains a large supply of air, is the material best adapted for keeping the body warm in bed. Fleecy woollen blankets are the most suitable coverings in every respect. They are not only warm, but their warmth is of a healthy kind—since, from their lightness, they do not weigh heavily upon the body, and interfere by pressure with the free action of its functions; and their porousness permits the evaporation of its natural moisture. Impervious coverlets and bed-comforters, as they are sometimes called, stuffed and stitched solid with cotton, are not only poor protectors of the warmth, but disturbers of the ease and natural action of the sleeping body. An impervious cover-

ing, however, is useful in the depth of winter and in times of severe cold, because it prevents the escape of the warmth generated by the occupant of the bed on which it is placed. Thus brown paper, or even newspapers, placed on a bed, preferably under the counterpane or coverlet, will add materially to the warmth and comfort of the bed.

Bleaching.—See HARMFUL OCCUPATIONS.

Bleeding.—This is a procedure not often adopted now, except in cases of heart or lung disease, when there is great obstruction to the circulation. Formerly, nearly every one was bled, as a matter of course, every spring and autumn. The operation is performed thus:—The patient, sitting in a chair, bares his arm, and the surgeon fastens a piece of tape, or bandage, tightly about two inches above the elbow; in this way the return of the venous blood to the heart is prevented, so that the veins in the bend of the elbow swell up and become prominent. The surgeon then slits up the vein with a sharp lancet, and draws as much blood as may be required. Gentle friction along the arm will encourage the flow of blood. Bleeding is a mischievous practice, except in cases where the venous system is too full, and where the abstraction of five or six ounces of blood may prove beneficial.

Bleeding after Tooth-Drawing.
—See TOOTH-DRAWING, BLEEDING AFTER.

Bleeding from Nose, Symptoms of.—A considerable discharge of blood from the nose is usually preceded by chilliness, coldness of the limbs, weariness, pains of the back and head, costiveness, frequent, full, and sometimes hard pulse, with heat, fulness, and tension about the nose, strong beating of the arteries of the head and neck, and flushing of the face; but, occasionally, bleeding from the nose, like all other bleedings from constitutional causes, makes its appearance without any preceding symptoms, especially when it is

inconsiderable. Whatever are the symptoms preceding this flow of blood, the chief cause generally lies in an unhealthy condition of the constitution, or in a confined state of the bowels. The former seems to obtain most frequently in adults, and the latter in children. It is very seldom dangerous.

Bleeding from Nose, Treatment of.—In the treatment of this discharge of blood, it is necessary we should first consider whether it be owing to a plethoric or a debilitated state of the body, and whether it appears to afford relief from any previous unhealthy symptom, or is attended with manifest injury. For, in full habits, where there is considerable corporeal vigour, it is generally attended with advantage, and our principal regard should be paid to prevent its continuing too long, or being too profuse; while in weakly persons it is frequently hurtful, and, for the most part, requires to be checked without delay.

If, then, a considerable hæmorrhage from the nose occur in a young or middle-aged person, in whom no weakness is apparent, but rather a sufficient circulation of blood, the best and most proper remedies will consist in local astringents and emetics. The face may be frequently immersed in the coldest water, and the temples, or even the whole head, be surrounded with a band or napkin moistened with it, and frequently changed. Cold applied to the back by means of cold cloths or any cold metal, such as a bit of iron, will frequently succeed; or cold water and vinegar may be thrown up the nostrils with a syringe. These means will seldom fail to check the flow of blood; but when they do, an emetic of twenty grains of ipecacuanha powder may be administered in water, which is often a powerful remedy. It may, now and then, be requisite to give the patient ten drops of the tincture of digitalis three times a day, when the foregoing means are not perfectly successful. The diet, in this case, should be small in quantity, and consist of the simplest articles.

Bleeding, How to Stop.—See HÆMORRHAGE, THREE METHODS OF ARRESTING.

Blind, Reading for the.—"One of the greatest blessings ever conferred upon the blind," says a writer in the *Pall Mall Gazette*, "was doubtless the introduction of books printed in embossed letters. Unfortunately the inventors of the embossed system found only too many imitators, who, in their imitations, introduced a superabundance of variations; and thus it has come to pass that, apart from national differences, a number of different alphabets for the blind are used in one and the same country. Nor, in the absence of blind schools recognised by the State, could it well be otherwise. Many of our blind asylums have been founded by benefactors who were strongly in favour of one particular system of embossed letters, and who, in the fanaticism of their benevolence, would hear of no other. In an interesting little work on the subject of blindness by Dr. Thomas Bull—who at the moment of writing it had been without sight for eight years—it is pointed out that nothing like an educational series of books has been produced in any of the various embossed systems, and we are assured that if such a series were printed in Moon's system 'all would be able to read them.' To this very positive statement the Rev. B. J. Johns, chaplain of the Blind School in St. George's-fields, by whom Dr. Bull's volume is edited, replies in a note that 'this is a mere idle assertion, which has to be proved'; adding that 'the testimony of a very large number of blind children goes the opposite way.' The art of printing in relief was invented by Valentine Haüy, at the latter end of the eighteenth century, and was originally due to the moral and physical sensitiveness of a blind beggar who had received from Haüy a piece of silver, and brought it back to him, asking whether he had not given it by mistake in place of copper. Haüy commenced teaching his first pupils in 1784, since which year various modifications of his principle have been brought out. In England no

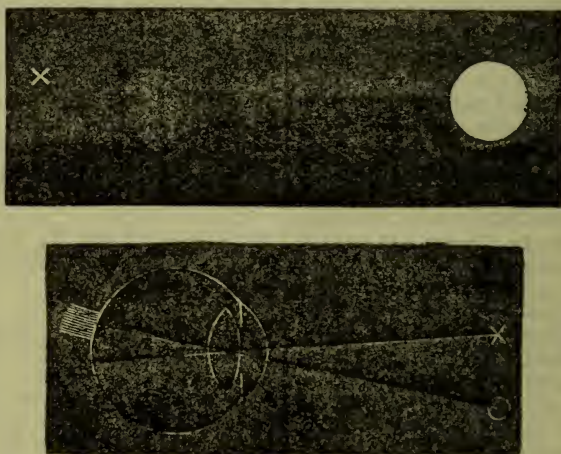
fewer than four of the so-called embossed systems—Frere's, Lucas's, Alston's, and Moon's—have been in general use for the last forty or fifty years; and eighteen years ago, when Dr. Bull's work was published, out of 27,000 blind persons in Great Britain, not more than 2,000 had learned to read. In Alston's system the Roman alphabet is used, which in a literary point of view would seem to present great advantages. Dr. Bull, however, declares that he could never learn to read by Alston's system, and that the systems of Frere and Lucas, in which special signs are used, in lieu of Roman characters, equally puzzled him; whereas by Moon's system (which is described as an improvement on the systems of Frere and of Lucas) he gained a perfect knowledge of the letters or signs in a single lesson, and in a very short time was able to read fluently. After giving various examples of the superiority of Moon's system over all others, Dr. Bull quotes one particular case, which he says 'shows strikingly how two or three days will accomplish that for Moon's system which nineteen years had completely failed to do for others.'

Blind, Sense of Touch in.—The highest development of the sense of touch is met with in blind persons—a circumstance which is to be attributed, for the most part, to the concentration of the attention, and of the powers of recollection and comparison which are brought to bear upon the mind; and, probably, to some extent, to an increased development of the tactile organs themselves, resulting, doubtless, as it has been ably suggested, "from that augmented nutrition which would be the natural consequence of the frequent use of them, and of the increased flow of blood that seems to take place towards any part on which the attention is constantly fixed."

Blind Spot in Eye.—It is a curious fact that one spot on the retina, not very far from the most sensitive portion, is entirely insensitive to light, and, what at first sight may appear still more curious, this *blind*

spot is at the entrance of the optic nerve, where the nerve fibres are most numerous, and where it might be thought that vision would be most acute. But the nerve fibres belong to the conducting layer of the retina, and the percipient layer, or Jacob's membrane, is, of course, wanting at the point where these fibres pass through it. The existence of this blind spot is very easily demonstrated by means of the first of the two diagrams here given. Close the left eye, and direct the right to the small cross on the left-hand side of the figure. Hold

over it. A raw egg broken into a boot, before putting it on, greatly softens the leather. Of course the boots should be well greased when hard walking is anticipated. After some hours on the road, whenever the feet are beginning to be chafed, take off the shoes and change the stockings, putting what was the right stocking on the left foot, and the left stocking on the right foot. Or, if one foot only hurts, take off the boot and turn the stocking inside out. Those were the plans adopted by Captain Barclay. When a blister is formed, "rub the feet, on going



THE BLIND SPOT ON THE RETINA EXPLAINED.

the page vertically before the eye, ten or twelve inches off, and then gradually bring it nearer, still keeping the gaze fixed upon the cross; the round spot will also be visible, except at a certain distance from the eye, about seven inches, when its image falls upon the entrance of the optic nerve, and it disappears from view. This is illustrated in the second diagram.

Blistered Feet in Walking.—

To prevent the feet from blistering, it is a good plan to soap the inside of the stocking before setting out, making a thick lather all

to bed, with spirits mixed with tallow dropped from a candle into the palm of the hand; on the following morning no blister will exist. The spirits seem to possess the healing power, the tallow serving only to keep the skin soft and pliant." This is Captain Cochrane's advice, and the remedy was used by him in his pedestrian tour. The recipe is an excellent one; pedestrians and teachers of gymnastics all endorse it.

Blisters.—No blister should be applied unless ordered by the physician. By the careless application of blisters, large and

disfiguring scars may be left, and much harm result. There is also danger that the cantharides, of which they are composed, may be absorbed and give rise to strangury. With a view to obviate this, blotting-paper soaked in oil has been interposed between the blister and the skin. By dissolving the active principle of the cantharides more quickly, its action is rendered more prompt, and in this way it was thought that the occurrence of strangury would be prevented. The best application, however, for this purpose is to sprinkle the surface of the blister with camphor. A solution of camphor in ether may be made by pouring ether over a piece of camphor till the camphor is dissolved. Some of the solution thus prepared should then be sprinkled over the surface of the blister; the ether evaporates, and an invisible film of camphor is left behind. The blister is usually allowed to remain on for six or eight hours; but in those who are of an irritable temperament it may be removed sooner; and if it has not risen, a poultice applied after its removal will generally effect this. The blister should be retained in position by means of a bandage suited to the part to which it is applied, or by strips of adhesive plaster, or by being spread upon plaster. Previous to applying the blister, the only preparation that is required is to wash the part with soap and water, and dry it well with a rough towel, using sufficient friction, while so doing, to make the part glow. Some prefer applying a sinapism previous to applying the blister, but this is unnecessary.

Blisters, After-Treatment of.—

The after-treatment of any blistered part will vary according as it is desired to keep the sore open or to heal it. Usually it is desired to heal it, and for this purpose, on removal of the blister, the blebs should be cut with a pair of scissors in their most dependent part, after which a piece of fine cotton wool should be applied. On removing this, three or four days after, the sore will generally be found to be quite healed. Instead of cotton wool being used, the sore

is frequently dressed with spermaceti ointment spread upon lint. This also forms a very nice and cooling application, and answers well.

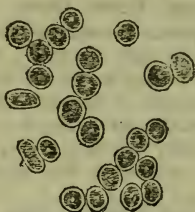
Blisters, Sore from, How to keep Open.—Should the intention be to keep the sore open, the cuticle must be removed by cutting round the edges with a pair of scissors; or, instead of doing this, a bread poultice may be applied, which will answer equally well for the purpose. Some irritating substance is then applied upon a piece of lint or rag, which should not be larger than the blistered surface, as it would then unnecessarily irritate the surrounding sound skin. The substance which is most usually employed for the purpose is savin ointment. As a flux results from the application of this ointment, it ought to be removed by means of a poultice each time before the new dressing is applied. If this be not attended to, the part will dry and heal. Sometimes it is desirable to cause a more rapid blister, in which case blistering fluid should be made use of. This should be painted on with a camel's hair pencil, care being taken to prevent it spreading beyond the part which it is wished to act upon. This forms a very ready and efficient means of producing a blister. The strong solution of ammonia is sometimes used for the same purpose; and here the same care must be taken, to prevent it spreading, as in the former case.

Blood (*Anglo-Saxon, blod; Ger. Blut*).

—The blood as it is found flowing in the living body seems to be a thickish, heavy fluid, of a bright scarlet colour when issuing from an artery, but of a deep purple or nearly black colour when coming from a vein.

When it is examined, however, under the microscope, we find that it really consists of a colourless fluid in which there are millions of minute coloured globules. These little globules are the real source of colour, which seems to the naked eye to belong to every part of the blood alike.

The colourless fluid portion of the blood is called the *liquor sanguinis*, or *plasma*; the coloured minute bodies are termed the *blood globules*, or *blood corpuscles*.



THE RED CORPUSCLES OF THE HUMAN BLOOD, HIGHLY MAGNIFIED.

The blood of a man is heavier than water: its specific gravity 1.055; that is to say, if a certain quantity of water weighs 1,000 grains, the same quantity of blood will weigh 1,055 grains.

There is a peculiar smell connected with human blood, most easily recognised when blood is just drawn. It is not difficult to tell the kind of animal from which blood has been obtained, by comparing the smell of the blood with the smell of the animal. The strong odour of the pig or cat, and the peculiar milky smell of the cow, are very easily detected.

Blood, Circulation of the.—

The blood is composed of all matters necessary—first, to the formation of the various structures of the body, and secondly, to keeping up their temperature. The first it receives, through the stomach and alimentary apparatus, from the food—as we shall see in a little—and it leaves behind it the old waste matters to be carried off by the excretory apparatus. The latter, oxygen, it absorbs in the lungs, giving up in exchange carbonic acid, which, or, at any rate, one of its elements—carbon—it has taken up from all parts of the body. It is clear enough, then, that the blood must be continually travelling from the sources of supply to those of deposit.

This travelling is known as the *circula-*

tion. Let us suppose the left ventricle filled with blood of a bright vermilion, containing all the pure elements of nutrition, and saturated with oxygen. The ventricle contracts, the blood is forced to leave it by the great artery, the aorta (as it is prevented by valves from doing so by the only other outlet, viz., that into the left auricle), and to go through all the arterial branches into the capillaries, there to deposit the specific nutriment for each structure, and take up carbonic acid in exchange for oxygen. It then makes its way back through the veins of a deep purple colour, loaded with carbonic acid, and, until it reaches the *venæ cavæ*, also drained of its nutritious qualities, which it here again receives, and finally re-enters the heart by the right auricle in its dark deoxygenized condition. The right auricle now contracts, and as the valves in the veins prevent its regurgitating in them to any large amount, it escapes by the only other outlet into the right ventricle.

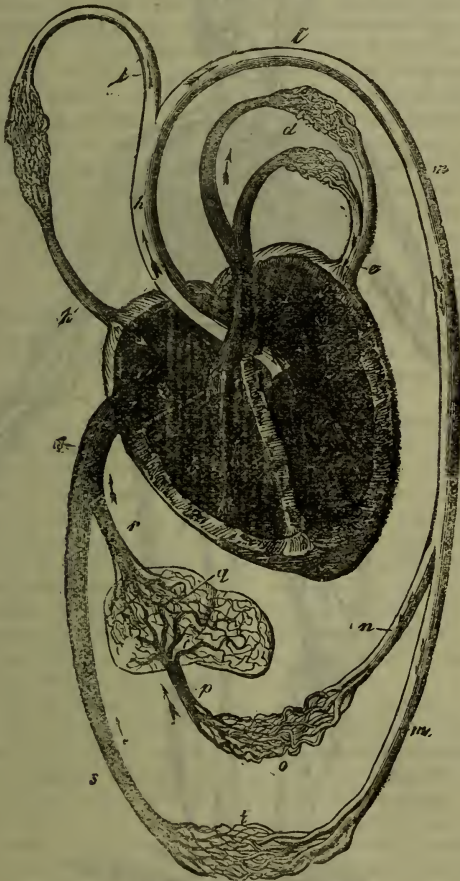
The right ventricle now contracts—the blood within it is prevented by the valves from flowing back into the right auricle, and is therefore propelled through the pulmonary artery into the capillaries in the air-vessels of the lungs; the lungs at the same time expand and draw in air; oxygen passes through the membranous walls of the air-cells into the blood, and carbonic acid in the same manner passes out of the blood into the air-cells, and from them to the external air; and the blood, thus re-oxygenized, and again bright scarlet, flows through the pulmonary veins into the left auricle, which, like the right auricle, contracts, and sends the blood into the left ventricle. This circulation of the blood through the lungs and back again is called the *lesser circulation*.

During its circulation through the body the blood is being continually deprived of some of its constituents. The numberless organs and tissues of which man's body consists are undergoing perpetual change, and in carrying out its function some part of each organ is destroyed. Thus we cau-

not think, feel, or move without wasting some portion of the brain, nerves, or muscles.

A diagrammatic view of the circulation in the human body is given below. The

apparatus. The view is taken from before, so that what appears to the right of the person looking at the diagram corresponds with what is left in the body, and *vice versa*. *a*, the right auricle; *b*, the right



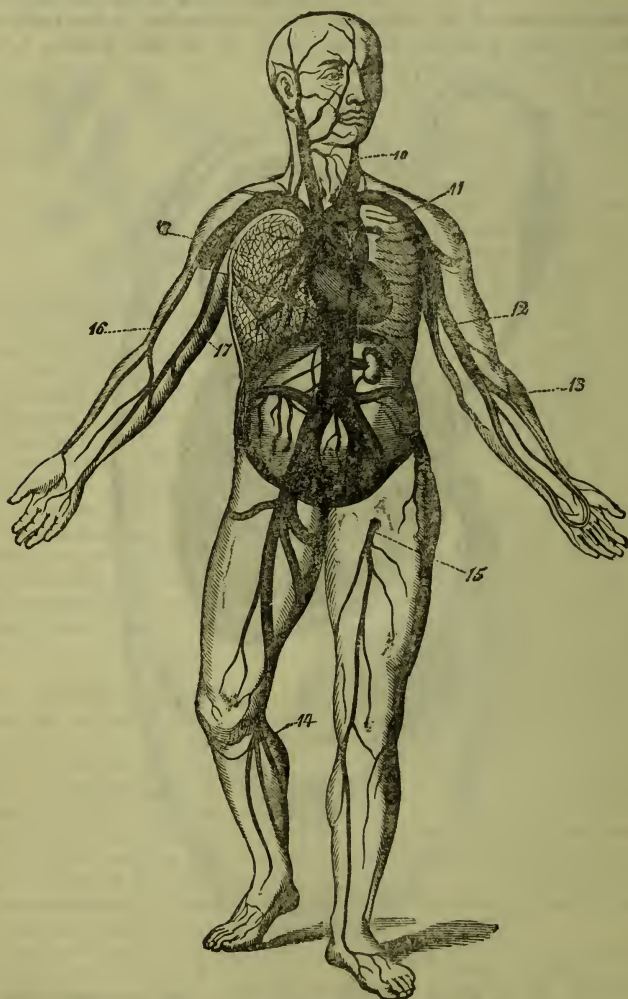
VIEW OF THE CIRCULATION.

direction of the blood current is represented by the arrows. The portion that is shaded-in darker than the rest represents the venous system; the lighter part represents the arterial portion of the circulatory

ventricle; *c*, the pulmonary artery; *d*, the lungs; *e*, the pulmonary vein; *f*, the left auricle; *g*, the left ventricle; *h*, the aorta; *i*, vessels supplying the upper part of the body with blood: *l*, *m*, vessels carrying

blood to the lower parts of the body; *n*, arteries going to supply the stomach, in-

veins issuing from the viscera already alluded to; *q*, the liver; *r*, the hepatic



CIRCULATION OF THE BLOOD ILLUSTRATED.

testines, spleen, and pancreas; *o*, the abdominal viscera already mentioned; *p*, the vena portæ formed by the junction of the

vein; *s*, the inferior vena cava; *k*, the superior vena cava; *t*, the terminal radicles.

Blood, Circulation of the, Discovery of.—The true office of the heart was not fully known till Harvey discovered the circulation of the blood. So long ago, however, as the days of Plato, a tolerably rational idea seems to have been entertained of its function and of the circulation of the blood, for, in speaking of this organ, Plato observes: "It is the centre or knot of the blood vessels, the spring or fountain of the blood, which is carried impetuously round; the blood is the food of the flesh, and for the purpose of nourishment the body is laid out in canals like those which are drawn through gardens, that the blood may be conveyed as from a fountain to every part of the body." It would be difficult for any one at the present day to give in as few words a more correct and expressive idea of the whole subject than is here given by this ancient philosopher.

Blood, Circulation of the, View of.—A view of the heart, or central organ of circulation, with the whole circulatory apparatus, is given on the previous page. 1, represents the heart; 2, the pulmonary artery; 3, the inferior or ascending vena cava; 4, the superior or descending vena cava; 5, the aorta; 6, point of division of the aorta into the right and left common iliac arteries; 7, point of division of the left common iliac artery into internal and external iliac arteries; 8, external iliac artery; 9, internal iliac artery; 10, left common carotid artery, with internal jugular vein lying to its outer side; 11, left subclavian artery, and the axillary artery, which is its direct continuation; 12, the brachial artery; 13, the radial artery, one of the divisions of the brachial at the bend of the elbow; 14, anterior tibial artery; 15, the long saphenous vein; 16, cephalic vein of right arm; 17, the basilic vein; 18, the ramifications of the pulmonary vein and arteries in the left lung. The direction of the blood current is indicated by the arrows. The veins are shaded in darker than the arteries. All the larger arteries are deeply seated, by which arrangement they are protected

from injury by accidents, while the veins, which do not involve so serious consequences in case of wounds, are generally placed near the surface of the body—often immediately under the skin, as on the back of the hand and upon the wrist.

"Some knowledge of the position of the arteries," it has been well observed, "and especially of those points at which they can be most easily felt and compressed, may at times be useful to all. It is no uncommon thing for medical men to be called to accidents in which immense and injurious loss of blood has taken place from a wounded artery, which might have been saved to the sufferer by any one possessed of sufficient knowledge and presence of mind to put his thumb on the main trunk of the vessel."

Blood, Circulation of, Nervous Influences on.—See NERVOUS INFLUENCES ON CIRCULATION OF THE BLOOD.

Blood, Coagulation of the.—The chemical properties of the blood are highly curious. When blood is taken from its blood-vessel, and allowed to remain at rest, it soon separates spontaneously into two distinct parts, into a solid mass and into a fluid matter, in which the solid mass swims. The solid portion of the blood is termed the *clot*; the fluid portion is called the *serum*; and the process by which the separation takes place is denominated *coagulation*.

This coagulation or clotting of the blood always takes place when blood escapes out of a vein or blood-vessel. The blood never clots within healthy blood-vessels, such as veins and arteries. Directly the blood escapes from a vein or an artery, and comes in contact with any dead material, such as the ground or a stone, or a glass jar, or any kind of vessel, it at once begins to clot, or coagulate. Or, in other words, the mere contact of dead material with blood causes the formation of fibrine, or clot, in that blood.

This leads to the explanation of the curious fact that if you cut your finger or prick yourself, although at first a little

blood escapes from the wound, yet after a little while the bleeding ceases. Why is this? Why does not the wound go on bleeding till you have lost every drop of blood in your body? Well, the blood ceases to flow from the wound because, very soon after the blood comes in contact with the cut or wounded flesh, it begins to coagulate, or clot, and the clot forms a plug or cork to the open ends of the little injured blood-vessel. It is the formation of fibrine or clot in the wound and in the mouths of cut blood-vessels that prevents our bleeding to death whenever we cut our flesh. When the wound is large, however, and the clot which forms is driven out of the wound by the stream of blood, there is danger of bleeding to death unless proper means are taken to stop the escape of blood.

Blood, Constituents of the.—

The various constituents of the blood may be seen from the following table. It is given by G. H. Lewes, in his "Physiology of Common Life," as the nearest approach to a table of the substances which form the immediate composition of every 1,000 parts of human blood:—

Water	784.00
Albumen	70.00
Fibrine	2.20
Cells { Globulin	123.50
Hæmatin	7.50
Cholesterine	0.68
Cerebrine	0.40
Seroline	0.02
Fats { Oleic and margaric acid	
Volatile and odorous fatty acid	0.80
Fat containing phosphorus	
Salts { Chloride of sodium	3.60
Chloride of potassium	0.36
Tribasic phosphate of soda	0.20
Carbonate of soda	0.84
Sulphate of soda	0.28
Phosphates of lime and magnesia	0.25
Oxide and phosphate of iron	0.50
Extract salivating matter, urea, colouring matter of bile, accidental substances	5.47

1000.00

In this table sugar is omitted, yet it is known that sugar, in varying quantities, always exists in the blood quitting the liver, where it is formed from albuminous matter, and is also generally found in blood at other parts of the organism; but because this sugar rapidly undergoes transformation into other substances, its amount cannot be estimated.

Blood - Globules. — The blood-globules differ in form in different animals, and an acquaintance with the form of the red corpuscles may prove of great importance in criminal cases. For instance, suppose a murder has been committed, and stains resembling blood are observed on a knife belonging to the suspected murderer. He accounts for the stain by saying that he has lately killed a hen or a duck. The truth of his statement may be readily tested, for whilst the blood-globules in a man are round, in the hen they are oval and nucleated. "A woman once," says Dr. Foulis, to one of whose lectures we are largely indebted in the preparation of this section, "came to an hospital and stated that she had lately burst a blood-vessel and was bleeding to death. With a view of showing she was telling the truth, she exhibited her handkerchief saturated with blood. The doctor, before allowing her to go into the hospital, examined the blood under the microscope, and found the globules were oval and nucleated; that they were in fact the blood-globules of a hen. When told she was found out, she confessed that she had killed a hen and soaked her handkerchief in the blood."

Now, for what purpose have we blood globules in the blood? There can be no doubt that the red blood-globules serve mainly as carriers of oxygen to all parts of the body. As a general rule, those animals which have few but large blood-globules—such as frogs and salamanders—are lazy, sluggish animals; but in those animals where the red blood-globules are small but very numerous, the respiration, the circulation of the blood, and all the functions of the body are increased in activity.

These little red blood-globules have each a duty to perform. After their work is done they perish. We cannot move a finger or a limb, we cannot speak, or think, or laugh, without thousands of these little red globules perishing. It is calculated that every second as many as 20,000,000 of these little red globules perish in our bodies.

Mixed up with the red blood-globules, we find another little body in the blood, called the *white blood-globule*. It is so called because it has no colour, differing in this respect altogether from the red blood-globule. In health there may be 1 white blood-globule to every 400 or 500 red blood-globules in the human blood, but in some diseases the proportion may mount as high as 1 to 10.

Blood in Cookery.—The blood of the pig is sometimes mixed with groats and fat, and the mixture is called black-pudding. Blood needs a considerable admixture of starchy and oily matter to afford a complete nourishment: it contains about 78 per cent. of water, the remainder being, for the most part, nitrogenous matter with some mineral salt.

On the subject as to whether we are wise economically and are justified economically in bleeding animals to death, and throwing away all the blood, which is, after all, good food, Dr. Lankester makes the following remarks: "When we recollect that we take from five pounds to twenty pounds from a sheep or an ox, and multiply that by the number of sheep and oxen killed in the course of a year, you will find that it amounts to something quite frightful to contemplate. Now, I have no hesitation in saying that the blood you take away is just as good food as the blood you leave in, and that you would do much better to leave the blood in the animal. There are other ways of killing animals than bleeding them to death.

"These are unpleasant things to think of; but, after all, we have no hesitation in eating the mutton and beef after it is slain, and we ought to be able to give a reason for

our extravagance. We do not take the blood away from hares and rabbits: they are brought to the table and eaten by the most fastidious. So also with birds—pheasants and partridges—we do not bleed them; and I tell you more—if we did they would not, be so pleasant to eat; they would lose some of their gamy flavour. Dr. Carson, of Liverpool, many years ago pointed out the great loss incurred in the present mode of killing animals, and suggested a method of killing them by which the blood was saved; and Dr. Carson induced a certain number of people of Liverpool to try meat killed in his way, and they declared it so much better that a butcher was induced to kill his animals in that way, and the result has been that he has surrounded himself with customers. Mr. Carson, son of the late doctor, was kind enough to send me up a quarter of a sheep which had been killed in this way. I invited a few friends to partake of it, and they one and all pronounced it delicious. Economically this is an important question; and it ought to be a consideration whether we are justified in throwing away so large a quantity of this nutritious albumen."

Blood, Purification of.—See RESPIRATION, PURIFICATION OF BLOOD BY.

Blood, Quantity of, in Human Body.—It is extremely difficult to find out the exact quantity of blood in the human body. In some foreign countries they do not hang criminals: they decapitate them, or cut off their heads. Now, it occurred to some scientific men that the best way to tell how much blood is in the body would be to weigh a criminal just before his head was cut off, and then to weigh the head and trunk after the blood had drained out of them. The difference in weight would then be the weight of the blood in the body before the head was cut off. As the result of many observations of this kind, it was found that the blood in the body is about 12·5 per cent. of the entire weight of the body; that is to say, if a body weighs 100 lbs., it contains about 12 lbs. of blood.

Blood, Supply of, to Skin.—The blood supply to the skin is very abundant, as may be judged from the fact that even a fine needle cannot be introduced into it without drawing blood from some capillary or delicate blood-vessel. At the upper or outer portion of the corium, the blood-vessels, or arteries, which have become exceedingly fine and delicate (and are called *capillaries*, from the Latin *capillus*, a hair, so very minute are they), rise into each one of the many *papillæ*, or elevations of the papillary layer, and doubling upon them—



NETWORK OF CAPILLARY BLOOD-VESSELS
SPREAD UPON THE AIR-CELLS OF THE LUNGS.

selves they descend again and become veins, and finally enter the larger veins whereby the blood is carried again to the heart and the lungs to be purified. The outer or epidermal layer contains no blood-vessels, its cells are nourished indirectly from the portions beneath. Hence blood is not drawn by a blister, or when the skin is lightly scraped or rubbed off; it is only when the deeper layer, or corium, is reached and wounded that blood is obtained.

Blood-Vessels, Effect of Cold on.—See COLD, EFFECT OF, ON BLOOD-VESSELS.

Blushing, Cause of.—See NERVOUS INFLUENCE ON CIRCULATION OF BLOOD.

Bodily Exercise, Necessity for.—In an old number of the *American Annals of Education* there is an instructive article on the necessity of combining bodily with mental exercise. "For twenty years and more," says the writer—Dr. Combe—in reference to what had taken place in an American seminary, "the unnatural union of sedentary with studious habits, contracted by the monastic system, has been killing in the middle age. The Register of Education shows in one year a hundred and twenty deaths. Examine into the particular cases, and these will be found the undoubted effects of sedentary habits. Look at one name there—he had valuable gifts, perfected by two years' academic, four years' collegiate, and three years' theological studies. He preached, gave much promise, and then died of a stomach disease: he contracted it when a student. He did not alternate bodily with mental labour, or he had lived, and been a blessing to the Church. When he entered on his studies, he was growing into full size and strength. He sat down till his muscles dwindled, his digestion became disordered, his chest contracted, his lungs congested, and his head became liable to periodical pains. He sat four years in college and three years in theological application. Look at him now. He has gained much useful knowledge and has improved his talents; he has lost his health. The duties of his mind and heart were done, and faithfully so; but those of his body were left undone. Three hundred and seventy-five muscles, organs of motion, have been robbed of their appropriate action for nine or ten years, and now they have become, alike with the rest of his frame, the prey of near one hundred and fifty diseased and irritable nerves."

Body, Care of the.—See PRESERVATION OF HEALTH.

Body, Cavities of the.—See CAVITIES OF THE BODY.

Body, Compounds of.—The compounds of the body in which the organic

elements exist, and their weight in a body weighing 154 lbs., are as follows:—

	lb.	oz.
Water, containing oxygen and hydrogen. (See WATER.)	111	0
Gelatin, containing oxygen, hydrogen, carbon, and nitrogen. (See GELATINE.)	16	0
Albumen	4	3
Fibrine	4	5
Fat, containing carbon and hydrogen	12	0

Body, Digestion and Condition of.—See DIGESTION AND CONDITION OF BODY.

Body, Heat of, Reduced by Perspiration.—See HEAT OF BODY REDUCED BY PERSPIRATION.

Body, Human, Elements of.—See ELEMENTS OF HUMAN BODY.

Body, Human, Water in.—See WATER IN HUMAN BODY.

Body, Influence of Mind on.—See MIND, INFLUENCE OF, ON BODY.

Boiled Bread Pudding.—Take of stale bread half a pound; pour over it a pint of hot milk, and allow the mixture to soak for an hour in a covered basin, then beat up with the contents of two eggs. Put now the whole into a covered basin, tie a cloth over it, and place it in boiling water for half an hour. It may be eaten with salt or sugar.

Boiled Flour and Milk.—Wheaten flour, kneaded with water, is put into a linen cloth and tied firmly, after which it is placed in a pan with water and allowed to boil slowly for twelve hours. It is then placed before the fire to dry. The thick rind which has formed should be taken away on removing the cloth, and it should be again dried. A tablespoonful of this grated and boiled with a pint of milk, is very good as an article of diet in recovery from diarrhoea or dysentery.

M. D.

Boiling.—Of all cooking processes, boiling is the easiest and most general. It, however, notwithstanding its simplicity and universality, is often ill performed. Meat can be boiled for either making soup or obtaining a good dish of solid food. Cooks are very apt to delude themselves with the idea that both may be consummated by one process, and that from the same pot they can have simultaneously a supply of nutritious broth and a well-cooked piece of meat. This is an error. It is impossible to get the two together. The soup must be sacrificed to the meat, or the meat to the soup. The process for obtaining one is essentially different from that for making the other. They are in fact diametrically opposed; for what is best for the soup is worst for the meat, and conversely. The cook must clearly decide either for the one or the other before beginning the boiling process. If the object shall be a good soup, cut up and put your meat in cold water, apply the fire, raise the heat gradually to the boiling point, and then boil it well and long. By this means alone can all the nutritious and savoury qualities of the meat be thoroughly extracted, and the desired result, a palatable and substantial soup, obtained. As for the solid residue, it will be as tasteless as a trodden-out slipper, and hardly more fit for food.

“If we wish,” says one authority, “to cook meat in such a way as to preserve the maximum of nutriment in the most digestible form, we should place it in large pieces in boiling water, and keep it there for five minutes. The high temperature coagulates the albumen at the surface of the meat, stops up its pores, and thus prevents the juices from escaping. After this boiling of five minutes, add cold water to reduce the heat to about 150 degrees Fahrenheit, and keep it at that temperature until the meat is sufficiently cooked. It will then be found to be tender, juicy, savoury, and nutritious. Salted meat intended to be eaten cold should be allowed to cool in the water in which it has been boiled.”

Boiling is well adapted to vegetables,

rendering them more soluble in the stomach, and depriving them of a considerable quantity of air, so injurious to those of weak digestive powers. Very striking and unexpected effects are sometimes produced from the boiling of vegetables, as in the case of several plants, which are very acrid, and even poisonous, in a raw state, becoming bland, sweet, and wholesome by simply boiling them in water. The potato is a familiar example, being in its raw state nauseous and unpalatable, perhaps even in a slight degree poisonous, as it is one of the nightshades (*solanum tuberosum*); but when dressed, it is rendered farinaceous, digestible, and wholesome.

Boils.—A boil is a small tumour common to every part of the surface of the body, hard, circumscribed, acutely tender to the touch, and suppurating, with a core in the centre. It is chiefly found in persons of a full habit and great vigour, but is sometimes met with also in debilitated patients, who are evidently suffering from ill-health.

Boils, Treatment of.—When a boil occurs in the strong and vigorous, some cooling, opening medicine should be given, and a common poultice be applied to the boil till it suppurates and breaks, when it may be dressed twice a day, with calamine cerate, till it heals. If the ulcer gets into a chronic state, and wants stimulating in order to its healing, apply an ointment composed of two parts of spermaceti ointment, and one part of the ointment of nitrate of mercury.

Boils not unfrequently arise in weakly habits, and where the constitution is evidently in an unhealthy state. In such cases an alterative pill given every night, or every other night, with an aperient pill occasionally, will be found of great service. The compound decoction of sarsaparilla is likewise an excellent medicine, and may be taken at the same time.

Boil or Sty on Eyelid.—A *sty* on the eyelid (called, medically, *hordeolum*) is

of the same nature as a boil, and frequently accompanies attacks of boils, and also *acne*. It is an inflammation in and around one or more of the *meibomian glands* of the eyelid, which are modified sebaceous glands, giving out a fatty secretion. They should also be taken as an evidence of ill-health, and never be considered as salutary or beneficial.

Boils and Fungi in Ear.—One of the most painful of ear diseases is an attack of boils in the auditory canal, usually at that point where the auricle passes into the canal. Not uncommonly these are caused by the irritation in the canal set up by the growth of a microscopic vegetable parasite, the fungus *Aspergillus*. In many cases, however, it is not easy to say whether the fungus excited the boil, or whether the small particles of matter from the boil have supplied the soil most likely to cause this parasitic plant to grow in the auditory canal. Be this as it may, the presence of this parasite in the ear excites a stubborn and intense inflammation in the organ, with earache and deafness. The usual recourse now is to pour oil and fatty matters into the ear, which, unfortunately for the patient, only feeds the fungus, causes it to grow with renewed vigour, and the patient grows worse. Oils and fats should, as a rule, be kept from the ear; and most positively they should never be used if this parasitic fungus has attacked the ear. After a boil in the ear, the ear should be most carefully syringed, in order to cleanse away all remnants of blood and matter, which might offer a soil for this fungus. The microscope alone is able to decide whether this minute vegetable is in the ear or not. Nearly *all* earache is attended with diminution of hearing. The only exception is neuralgic pain, arising from defective teeth.

Boils on Gums.—Gum-boils are sometimes limited to the substance of the gums, and sometimes connected with the decay of a tooth or socket. In the first variety it is a disease of only a few days'

duration, and ceases almost as soon as it has burst or is opened; in the second, it will often continue troublesome till the carious tooth is extracted, or the carious socket has exfoliated, or the whole of its texture is absorbed.

Boils on Gums, Treatment of.—

Gum-boils when connected with an unhealthy condition of the subjacent teeth, rarely disperse without passing into supuration, and it is, therefore, better to encourage this process by the use of warm fomentations, or cataplasms, than to repel it. An early opening of the tumour is of importance, as, from the structure of the parts concerned, the walls of the abscess are usually tough and thick, and the confined matter seldom obtains a natural exit with sufficient freedom. A little mild opening medicine every other day will be found useful, and, after the abscess has burst or been opened, washing the mouth twice or thrice a day with an astringent lotion will tend materially to make the cure permanent. Twenty grains of sulphate of zinc, dissolved in half a pint of rose-water, will be a suitable lotion for this purpose.

Bones (A.-S. *ban*, bone).—The bones are the hardest and most solid parts of the human system, and are designed as a framework or foundation for the attachment and support of the softer parts. They also serve to give form and symmetry to the body, and are useful for the purposes of motion and locomotion. When connected together in their natural order, they form what is called the *skeleton*.

Like all other parts of the body, except the nails and hair, the bones are supplied with blood-vessels and nerves, and in their healthy state have little or no sensibility. But when in a state of inflammation, they are extremely sensitive and painful. The bones are covered with a very firm, thin, and closely attached membrane, called the *periosteum*. When this membrane covers the skull or cranium, it is called *pericranium*.

That bones are provided with blood-vessels is shown by the fact that anatomists are able to trace these vessels into their substance, and to inject those of a young subject with wax so minutely as to make the bones appear of a lively red colour.

The insensibility of the bones to pain when in a state of health is a providential arrangement. Surrounded as they are by the softer and more sensitive parts, these afford them ample protection, while their insensibility enables them to act, for any length of time, without weariness or pain. But when a severe accident occurs to break them asunder, or destroy their texture, pain then becomes their kindest guardian, and the surest promoter of their recovery. In such circumstances, indeed, nothing can be more truly benevolent than pain. It accompanies that inflammation and vascular activity without which the work of reunion of the broken part cannot be accomplished; and is the means of securing the repose and quietude which are essential to the exact adaptation of the parts to each other, and which can be effected only by causing excessive pain to follow even the slightest motion.

Of such utility is inflammation on these occasions, that when, as sometimes happens, the requisite degree of it, from want of nervous sensibility in the part, does not take place, and the bone remains ununited for many weeks, surgeons are in the habit of using violence to produce the necessary stimulus. In this case they either rub the broken ends rudely against each other, or introduce an instrument between them, by which pain and irritation may be excited; and reunion is accomplished. On the other hand, if pain did not guard the limb from motion when the process of recovery is going on, the union would be incessantly disturbed by every heedless and unavoidable start altering the relative position of the parts. This, also, is occasionally exemplified in practice. Looking at these facts, it is impossible not to admire the wisdom and the benevolence manifested in the adaptation of the structure of bones in every

particular to the circumstances and occurrences of life.

Bones, Change in.—There is a gradual but constant change going on in the bones of all living persons. They increase in size, the proportion of the animal matter decreasing as we advance in years, till, in extreme old age, the earthy substance so preponderates that the bones are very brittle and easily broken. The growth of a bone, as a general rule, takes place only by addition to its free ends and surfaces.

Any part of the system condemned to inaction loses in power; and this rule holds good in an especial manner even with the hard and apparently unalterable fabric of the bones. It is ascertained by extensive experience that complete inaction, besides diminishing the size of bone, injures its structure so much as to deprive it of hardness, and render it susceptible of being cut with a knife. Now, what is strongly marked in the extreme case is not less active, although it may be less palpably apparent, in cases where there is great, though not total deprivation of exercise; and in this is one cause of the bad health, crooked spines, and deformed figures whose foundation is to be traced generally to the habitual restraint and regulation of attitude imposed in modern education: evils which could never stand for a moment before knowledge or reason. The bones are the solid framework of the body; and unless they be duly exercised in actual motion, they, like the muscles which move them, suffer and decay, in virtue of that universal law which requires the exercise of voluntary organs as the condition of their well-being—as the stimulus necessary to their efficient existence.

Bones, Classification of.—The bones are divided into four classes, known as *Long*, *Short*, *Flat*, and *Irregular*.

(1) *Bones, Long.*—The long bones are those which exist in the limbs, and are employed in locomotion. Their characteristics are that they consist of a shaft and two

articular extremities; these extremities being covered with what is termed articular cartilage, and being capable of mutual movement upon each other by one or another form of joint, the gliding movement of such joints being assisted by the presence of bags containing joint oil (synovia), which are placed between these articular cartilages. The shaft of a long bone is cylindrical, or nearly so, and its extremities are expanded. The shaft consists of a compact tissue, whilst the extremities are composed of spongy tissue, having a layer of compact tissue coated over them. The long bones are the cubit, the two bones of the forearm, the thigh bone, the shin and splint bones, the bones of the finger and toe, and the collar-bone.

(2) *Bones, Short.*—The short bones are compact, strong bones, having several articular surfaces for mutual adaptation, and are found in those parts of the body where strength and limited motion are required, such as the wrist and the bones of the ankle and instep. They consist of spongy tissue, with a coating of compact structure.

(3) *Bones, Flat.*—The flat bones afford broad flat surfaces for the attachment of muscles, and for the protection of cavities; they consist of two layers of compact tissue, containing a layer of spongy tissue between them. They are the skull bones, blade bones, haunch bones, breast bones, and ribs.

(4) *Bones, Irregular.*—Irregular bones are those which, as their names would suggest, cannot be grouped with those previously named, such as the spine, jaw bones, and several of the bones which make up the skull.

Bones, Composition of.—The bones are composed of both earthy and animal matter. The earthy portion, which is mainly the carbonate and phosphate of lime, gives them their solidity and strength; while the animal portion, which is mostly gelatine, gives them vitality, and prevents them from being too brittle. In children, while the bones are soft, these two substances are nearly equal; but in adults

there is a much larger proportion of the earthy than of the animal matter in the bones. In the disease called rickets the



SECTION OF BONE, MAGNIFIED.

earthy matter of the bones has been more or less absorbed, leaving them soft and flexible.

Bones, Fat in.—Bones contain considerable fat and nitrogenous matter. It has been estimated that six pounds of bones boiled for one hour are equal to one pound of meat in nitrogen, and to nearly two pounds in carbon.

Bones in Skeleton.—See SKELETON.

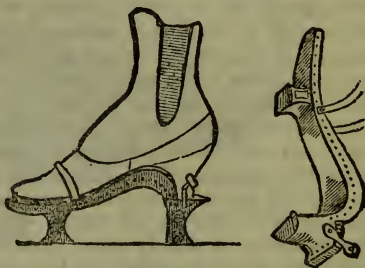
Bonnets.—See HEAD COVERINGS.

Boots and Shoes.—Boots and shoes should have broad low heels and be loose enough to avoid corns (which are almost always the result of trying to wear too narrow soles and too high heels), and yet not so loose as to give rise to excoriation from friction upon projecting portions of the foot. Neglect of this latter precaution sometimes gives rise to troublesome and intractable sores. Wearing indiarubber shoes in rainy or especially snowy weather is probably the best method of avoiding the dangers of wet feet, but the practice has great disadvantages, and is only a choice of evils. The ill

effects of rubber coverings for the feet may be reduced by being scrupulously careful to wear them only while walking or using active exercise, and taking them off as soon as we sit down or enter the house. Waterproof boots and shoes have no special advantages over rubber overshoes, and labour under the very great disadvantage that they are much less apt to be taken off as soon as the urgent necessity for their use ceases.

The shape of the boot should be suited to that of the foot as set down on the ground, when the individual partly rests on it: the sole should be broad, and the heel on a level with the sole.

Thin-soled shoes should be altogether disused as articles of dress. They ought only to be used for the purpose of dancing, and then they ought only to be worn while dancing. The invalid or dyspeptic ought assuredly never to wear thin shoes at other



CLOG FOR HIGH-HEELED BOOTS.



CLOG FOR LOW-HEELED OR FLAT BOOTS.

times. When wearing shoes of a moderate thickness of sole, it is a good plan to insert a thin layer of cork or felt within the shoe,

over the sole or next to the foot. Cork is a very bad conductor of heat, and is therefore to be preferred; if it is not to be had, or is not liked, felt may be substituted for it.

For those who have to go about in all kinds of weather, it would be a good thing if we could revive clogs or pattens, such as are shown in the accompanying illustrations.

Boots, Waterproofing for.—*See* WATERPROOFING FOR BOOTS, ETC.

Bowels, Sufficient Action of (*Old Fr. boel*, intestines).—The amount digested and passed off daily from the bowels depends on the amount the person usually eats the day before. Day-labourers pass thrice as much as the delicate and sedentary, because they require more food. It is easier and proper to form an estimate of what is a sufficient action of the bowels by the quality rather than the quantity, and that quality is determined by the relative consistency or solidity of the passages. If a person has every day a dejection which is in hard round balls, inclined to black, that person is constipated; but if the dejections occur only once in forty-eight hours, and are of the consistence of mason's mortar as he throws it from his trowel to spread it on the wall, such a person is not costive. What first passes out is usually harder, and the last softer; but if altogether the dejections are barely stiff enough to maintain their cylindrical shape, that is a healthy passage, and there is no constipation, in effect, even if there be but one such passage in forty-eight hours. The ordinary healthy colour of a dejection is a rich light brown, inclining to yellow.

Bowels, Noises in the.—*See* NOISES IN THE BOWELS.

Brain (*A.-S. brægen*).—The great nerve mass in man or animals, enclosed in the skull, and serving as the great starting-point from which the spinal marrow and all the nerves that permeate the body proceed.

It is divided into the *cerebrum* or brain, the *cerebellum*, or little brain, the *medulla oblongata*, or the continuation of the spinal cord within the skull, and the *ganglia* of the special senses. These parts of the brain will each be described under their several headings, and to each of these severally and separately the reader is referred.

Brain and Athletic Exercises.—

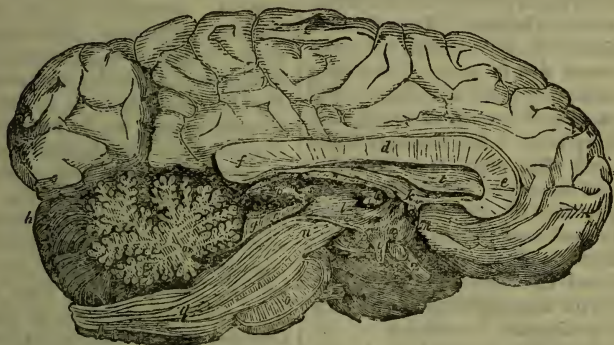
The circumstance that the ancient athletes, as the runners, gladiators, etc., in the Greek or Roman games were called, had proverbially the reputation of being stupid, is often urged as an evidence that unusual physical cultivation interferes with, or even prevents, high mental activity, probably because the nervous fluid or influence is partially withdrawn from the brain to the sorely-taxed muscles. There is, we have no doubt, a good deal of truth in this notion, especially as it is amply demonstrated that deficient exercise causes a heightened sensitiveness of the nervous system, generally a sort of morbid excitability and a greater susceptibility to the action of external influences of every kind.

Brain and Nerve Structure, Deterioration of.—Sometimes simultaneously with, sometimes preceding or succeeding, at some little interval, failures in the muscular tissues, are seen the evidences of deterioration of brain and nerve structure displayed in the loss of intellectual power, with changes of temper and even of disposition. Such alterations are slow; they often commence insidiously and develop almost imperceptibly, escaping the attention of the subject of them for the simple reason that they affect the organ of perception of external impressions itself. Very frequently they are distinctly visible to a close observer long before the state of dotage is recognizable by the ordinary eye.

There is no doubt that, under these circumstances life and intellectual vigour would often be prolonged by a judicious change of occupation and scene, particularly in foreign travel; and marked failure of

memory, loss of reasoning power, or capacity for mental application, are the symptoms which should warn elderly persons of the approach of intellectual decay, which, however, the means just suggested may avert, or at least for a long time postpone. Should these danger-signals be disregarded, as is the case in a large majority of instances, the time when they can be of service is apt to pass quickly by, and the perchance once vigorous intellect, wrecked and ruined, falls into a condition of decay which renders long life a grievous burden, not only to the sufferer himself, but also to the loving relatives and anxious friends who surround him.

and itself during the hours of wakefulness, and that these are recuperated during sleep. If the recuperation does not equal the expenditure, the brain withers—this is insanity. Thus it is that, in early English history, persons who were condemned to death by being prevented from sleeping, always died raving maniacs; thus it is also that those who are starved to death become insane—the brain is not nourished, and they cannot sleep. The practical inferences are these: (1) Those who think most, who do most brain work, require most sleep. (2) That time ‘saved’ from necessary sleep is infallibly destructive to mind, body, and



THE BRAIN.

Brain and Nose.—It is a common popular error to suppose that the nose communicates with the brain. It does not. Patients who are labouring under affections of the nose frequently entertain the idea that this supposed communication exists, and become seriously alarmed without the slightest reason for it. The nasal air passages communicate with the mouth, throat, gullet, and lungs, and between them and the brain is a substantial floor or partition of bone.

Brain and Sleep.—“There is no rule,” says Dr. Forbes Winslow, “more clearly established in the physiology of man than this, that the brain expends its energies

estate. (3) Give yourself, your children, your servants—give all that are under you, the fullest amount of sleep they will take, by compelling them to go to bed at some regular, early hour, and to rise in the morning the moment they awake; and, within a fortnight, Nature, with almost the regularity of the rising sun, will unloose the bonds of sleep the moment enough repose has been secured for the wants of the system. This is the only safe and sufficient rule; and, as to the question of how much sleep any one requires, each must be a rule for himself—great Nature will never fail to write it out to the observer under the regulations just given.”

Brain and Stomach, Sympathy between.—See STOMACH AND BRAIN, SYMPATHY BETWEEN.

Brain, Concussion of the.—See CONCUSSION OF THE BRAIN.

Brain, Effect of Over-Application on.—So little is the close connection of the mind with the brain generally understood, even among educated people, that instances are constantly occurring of the health of the nervous system being ruined by excessive application of mind, without the sufferer in the least suspecting the true cause of his ailment. This fact is well exemplified in the pages of a very sound and able American writer, who says: "I once knew a young Christian who resolved that he would pass the whole day in prayer. But very soon he became exhausted and weary. He, however, persevered through the whole day, with the exception of a few necessary interruptions; and when night came he felt a deadness and exhaustion of feeling which he unhappily mistook for spiritual desertion." We need scarcely add that no one at all acquainted with the laws under which God has placed the functions of the human body could ever have expected His blessing to attend so flagrant a violation of His designs, or have felt surprised at the apparent spiritual desertion increasing in exact proportion to the excess of the bodily fatigue. Cases like that of this young Christian show, in a strong light, the evils arising from confining ourselves too exclusively to the word, and neglecting the study of the works, of God, as if the latter were quite of a secondary character, and did not proceed from the same infallible source; whereas it is only by duly investigating the laws of God, as operating in the varied works of creation, that we become enabled rightly to interpret and to apply to our conduct what is revealed in His word.

Brain, Fish and the.—See FISH AND THE BRAIN.

Brain, Functions of Organs Modified by.—See FUNCTIONS OF ORGANS MODIFIED BY BRAIN.

Brain, Human, Size and Weight of.—See HUMAN BRAIN, SIZE AND WEIGHT OF.

Brain Power, Exhaustion of.—See WARNINGS OF NATURE.

Brain-Workers, Diet of.—Brain-workers—whether literary, professional, or business men—need the best of food served in a most agreeable manner, and in variety and abundance. Labour of the brain exhausts the system more than labour of the muscles. According to the estimates of Professor Houghton, three hours of hard study produce more important changes of tissue than a whole day of muscular labour. Whether this statement is mathematically accurate or not, we do certainly know by experience that a few hours of mental labour is more exhausting than a whole day of muscular labour to those who are accustomed to such toil. No literary man can spend as many hours at his work as the day labourer. While the mason, the carpenter, and the haymaker work their ten hours a day with only moderate fatigue, the professional man is wearied by three or four hours of severe consecutive thought. This exhaustion that we feel after hard study is the result and concomitant of the waste of tissue. This waste of tissue is supplied by food.

Brain-Workers, Food Required by.—If the brain could be used exclusively, without any exercise of the muscles, then the diet of brain-workers might be pretty exclusively confined to those articles which contain the fat, salt, and phosphorus of which the brain is composed. But it is impossible to live by brain alone; hence the necessity for a wide variety of food for the brain-working classes, of a quantity and quality adapted to nourish the whole body, with special reference to the nervous system.

The best food for the brain is fat and lean meat, eggs, and the cereals. It is now a matter of fact that brain-workers eat a better quality and larger quantity of food than mechanics and labourers.

In vacations, or whenever it is desired to rest the brain, fish may, to a certain extent, take the place of meat. We should select those articles which are most agreeable to our individual taste, and, so far as is possible, we should take our meals amid pleasant social surroundings. In great crises that call for unusual exertion, we should rest the stomach, that for the time the brain may work the harder; but the deficiency of nutrition ought always to be supplied in the first interval of repose.

Braising.—This method, much neglected in this country as a mode of cooking animal food, is strongly recommended by Sir Henry Thomson. "In braising," he says, "the meat is just covered with a strong liquor of vegetable and animal juices (*braise* or *mirepoix*) in a closely-covered vessel, from which as little evaporation as possible is permitted, and is exposed for a considerable time to a surrounding heat just short of boiling. By this treatment tough, fibrous flesh, whether of poultry or of cattle, or meat unduly fresh, such as can alone be procured during the summer season in towns, is made tender, and is furthermore impregnated with the odours and flavour of fresh vegetables and sweet herbs. Thus, also, meats which are dry, or of little flavour, as veal, become saturated with juices and combined with sapid substances, which render the food succulent and delicious to the palate. Small portions sufficing for a single meal, however small the family, can be so dealt with; and a *rechauffée* or cold meat for to-morrow is not a thing of necessity, but only of choice when preferred."

Bran.—Bran is the outer coating or envelope of the grain of wheat, and is usually taken away from the flour after the corn has been ground. In bran there is a

remarkable substance, known as *cerealin*, which acts like a ferment in causing the change and solution of other substances; and it may, therefore, aid in the processes of digestion when brown or wholemeal bread is eaten. That is to say, bread made from meal or flour from which the bran has not been abstracted. It is a difficult matter to get genuine wholemeal bread. The "brown bread" of the baker is usually made by mixing some bran with a lump of the dough prepared for making ordinary bread.

Brandy (*Ger.* *brannt*, burnt; *Wein*, wine).—Brandy is the alcoholic or spirituous portion of wine, separated from the aqueous part, the colouring matter, etc., by distillation. The word is of German origin, as shown above, and in its German form, *Branntwein*, signifies burnt wine, or wine that has undergone the action of fire. Brandies, so called, however, have been made from potatoes, carrots, beetroot, pears, and other vegetable substances; but they are all inferior to true brandy. Brandy is prepared in most wine countries, but that of France is the most esteemed. It is procured not only by distilling the wine itself, but also by fermenting and distilling the *marc*, or residue of the pressings of the grapes. It is procured indifferently from red or white wine, and different wines yield very different proportions of it, the strongest, of course, giving the largest quantity. Brandy obtained from *marc* has a more acrid taste than that from wine. The celebrated brandy from Cognac, a town in the department of Charente, and that brought from Andraye, seem to owe their excellence to being made from white wine. Like other spirit, brandy is colourless when recently distilled; by mere keeping, however (owing probably to some change in the soluble matter contained in it), it acquires a slight colour, which is much increased by keeping in casks, and is made of the required intensity by the addition of burnt sugar or other colouring matter. What is called *British brandy* is not, in fact, brandy,

which is the name, as we have said, of a spirit distilled from *wine*; but is a spirit made chiefly from malt spirit, with the addition of mineral acids and various flavouring ingredients, the exact composition being kept secret. It is distilled somewhat extensively in this country; real brandy scarcely at all. The brandies imported into England are chiefly from Bordeaux, Rochelle, and Cognac.

"A good sample of true Cognac," says Professor Church, "of pale colour, was found to contain 136 grs. of solid dissolved substances per imperial pint, 74 grs. being sugar. It was of proof strength, but is usually sold at 15 under proof. A fair sample of dark-brown 'British brandy' was found to contain 61½ grs. of solid fixed matter per pint, 18¼ grs. being sugar. Its strength was 17 under proof."

Genuine brandy improves in flavour by being kept.

Brazil Nuts.—See NUTS, BRAZIL.

Bread (A.-S. bread).—Among civilized people bread has become an article of food of the first necessity: and properly so, for it constitutes of itself a complete life-sustainer, the gluten, starch, and sugar which it contains representing azotized and hydro-carbonated nutrients, and combining the sustaining powers of the animal and vegetable kingdoms in one product.

Bread-making is a very ancient art indeed. The Assyrians, Egyptians, and Greeks used to make bread, in which oil, with aniseed and other spices, was an element; but this was unleavened. Every family used to prepare the bread for its own consumption, the trade of baking not having yet taken shape. It is said that somewhere about the beginning of the thirtieth Olympiad, the slave of an archon, at Athens, made leavened bread by accident. He had left some wheaten dough in an earthen pan, and forgotten it; some days afterwards he lighted upon it again, and found it turning sour. His first thought was to throw it away; but, his master coming up, he mixed this now

acescent dough with some fresh dough, which he was working at. The bread thus produced, by the introduction of dough in which alcoholic fermentation had begun, was found delicious by the archon and his friends, and the slave, being summoned and catechised, told the secret. It spread all over Athens; and everybody wanting leavened bread at once, certain persons set up as bread-makers, or bakers. In a short time bread-baking became quite an art, and "Athenian bread" was quoted all over Greece as the best bread, just as the honey of Hymettus was celebrated as the best honey.

The finest, wholesomest, and most savoury bread is made from wheaten flour (see WHEAT). There are of wheat three leading qualities—the soft, the medium, and the hard wheat; the last of which yields a kind of bread that is not so white as that made of soft wheat, but is richer in gluten, and consequently more nutritive. Rye bread comes next to wheaten bread; but it is not so rich in gluten; it is said, however, to keep fresh longer, and to have some laxative qualities. Bread made from barley, maize, oats, rice, potatoes, etc., "rises" badly, because the grains in question contain but little gluten, which makes the bread heavy, close in texture, and difficult of digestion; in fact, corn-flour has to be added before panification can take place. In countries where wheat is scarce and maize abundant, the people make the latter a chief article of sustenance when prepared in different forms.

Bread, Adulterated.—See ADULTERATED BREAD.

Bread, Aërated.—See AËRATED BREAD.

Bread, Brown.—See BROWN BREAD.

Bread, Chemical Composition of.—See CHEMICAL COMPOSITION OF BREAD.

Bread, Excessive Eating of.—Notwithstanding what has been said of

bread being perhaps the most important article of diet, it is not suitable for exclusive or very abundant use. There is an old remark—so old, indeed, that it has been ascribed to Hippocrates, the father of medicine—which implies that the excessive eating of bread is the worst species of gluttony. Though we cannot agree with this opinion, we are satisfied that bread may be too largely taken, to the exclusion of other articles. We therefore add the following quotation from a medical authority: "Bread, the staff of life, is not the most easy of digestion, if taken in considerable quantity. Very strong organs are requisite to convert it into nutriment, and more especially if it is new, or recently baked, for then it is of a glutinous and heavy nature, and extremely difficult of solution. Cases have been recorded indeed in which an immoderate quantity of fresh-baked bread proved the cause of death."

"In weak stomachs, a large proportion of bread is indigestible; it turns sour, produces heartburn and flatulence, and interrupts the perfect concoction of everything else. On this principle the necessity of paying much attention to this capital article of diet ought to be inculcated on valetudinarians in general. They should never abstain from it wholly; but use it with moderation, and consider it as one of those things which, sparingly used, is extremely necessary and beneficial; if otherwise, the fruitful source of many complaints, which are little expected from the cause."

Bread, Fermented v. Unfermented.—See FERMENTED BREAD v. UNFERMENTED.

Bread-making.—Panification, or bread-making, consists of the following processes in the case of wheaten flour. Fifty or sixty per cent. of water is added to the flour, with the addition of some leavening matter, and preferably of yeast from malt and hops. All kinds of leavening matter have, however, been and are still used in different parts of the world; in the East

Indies, "toddy," which is a liquor that flows from the wounded cocoanut tree; and in the West Indies, "dunder," or the refuse of the distilling of rum. The dough then undergoes the well-known process called *kneading*. The yeast produces fermentation and the *rationale* of the fermenting process may be thus described:—

"The yeast, or leaven, causes the flour to undergo the vinous fermentation, by which carbonic acid and alcohol are formed. The carbonic acid is prevented from escaping by the tenacity of the dough, which, becoming distended with gas, swells up, and acquires a vesicular structure, forming a kind of spongy mass. In this way, therefore, are produced the vesicles or eyes, which give to ordinary loaf-bread its well-known lightness and elasticity. If the vinous fermentation be not checked in due time by *baking*, the dough becomes sour; and for this purpose, the mass, after being formed into loaves, is exposed in an oven to an elevated temperature, which puts a stop to the fermentation, expands the carbonic acid, expels the alcohol formed, and drives off all the water capable of being removed by the degree of heat employed. On weighing bread taken from the oven, it is found to be twenty-eight or thirty per cent. heavier than the flour used in its preparation."

When the dough is well kneaded, it is left to stand for some time, and then, as soon as it begins to swell it is divided into loaves; after which it is again left to stand, when it once more swells up and manifests for the last time the symptoms of fermentation. It is then put into the oven, when the water contained in the dough is partly evaporated and the loaves swell up again, while a yellow crust begins to form upon the surface. When the bread is sufficiently baked, the bottom crust is hard, and resonant if struck with the finger, while the crumb is elastic and rises again after being pressed down with the finger.

A word as to the unwholesomeness of new bread and hot rolls. When bread is taken out of the oven it is full of moisture; the starch is held together in masses, and

the bread, instead of being crusted, so as to expose each grain of starch to the saliva, actually prevents their digestion by being formed by the teeth into leathery, poreless masses, which lie on the stomach like so many bullets. Bread should always be at least a day or two old before it is eaten; and if properly made, and kept in a *cool, dry* place, ought to be perfectly soft and palatable at the end of three or four days. Hot rolls, swimming in melted butter, ought to be carefully shunned by everybody who has the slightest respect for that much injured individual—the stomach.

Flour, when freshly ground, is too glutinous to make good bread, and should, therefore, not be used immediately, but should be kept dry for a few weeks and stirred occasionally until it crumbles easily between the fingers. Flour should be perfectly dry before being used for bread or cake; if at all damp, the preparation is sure to be heavy. Before mixing it with the other ingredients, it is a good plan to place it for an hour or two before the fire until it feels warm and dry.

Bread-making, Acton on.—The following observations on bread-making are extracted from Miss Eliza Acton's well-known English Bread Book:—

The first thing required for making whole-some bread is the utmost cleanliness; the next is the soundness and sweetness of all the ingredients used for it; and, in addition to these, there must be attention and care through the whole process.

An almost certain way of spoiling dough is to leave it half-made, and to allow it to become hard before it is finished. The other most common causes of failure are using yeast which is no longer sweet, or which has been frozen, or has had hot liquid poured over it.

Too small a proportion of yeast, or insufficient time allowed for the dough to rise, will cause the bread to be heavy.

Heavy bread will also most likely be the result of making the dough very hard, and letting it become quite cold, particularly in winter.

If either the sponge or the dough be permitted to overwork itself,—that is to say if the mixing and kneading be neglected when it has reached the proper point for either,—sour bread will probably be the consequence in warm weather, and bad bread in any. The goodness will also be endangered by placing it so near a fire as to make any part of it hot, instead of maintaining the gentle and equal degree of heat required for its due fermentation.

Breads, Mixed.—See MIXED BREADS.

Bread Panada.—Grate a piece of stale bread, and put it into sufficient water to form a thick pulp; cover it, and after it has soaked for an hour, beat it up with two tablespoonfuls of milk and a little sugar, and allow it to boil for ten minutes, stirring all the time.

Bread Poultice.—See POULTICES.

Breakfast.—After the long fast of the night a healthy person is eager for food as soon as he awakes in the morning. He should, therefore, wait no longer for his breakfast than during the time necessary to perform his ablutions and perfect his toilet. The activity required for these simple operations affords quite sufficient exercise for most people before taking their first meal. The brisk constitutional walk—as it is termed—on an empty stomach, at break of day, is of no advantage to any one. The most vigorous man may possibly endure, but the less robust will be sure to suffer from it.

The breakfast need never be a very elaborate meal. The morning appetite, however eager, has so much the unsophisticated character of natural hunger, that it craves for simple food. The breakfast should be always composed of light and easily digested food. A little coffee and a great deal of milk, with a free supply of well-baked bread, or such substitute for it as oatmeal porridge, or other articles of a farinaceous kind, are all that are required for the most vigorous people,

Breakfasts, Two Cheap.—By way of illustrating the advisability of knowing what foods contain, two cheap breakfasts suggested by the late Dr. Smith in his "Practical Dietary" may be quoted.

(1) Breakfast of tea, bread, and butter. Tea, $\frac{1}{4}$ oz.; sugar, $\frac{1}{2}$ oz.; skimmed milk, $\frac{1}{4}$ pint; water, $\frac{1}{2}$ pint; bread, 6 ozs.; butter, $\frac{1}{2}$ oz. The cost $1\frac{1}{2}d$. Amount of carbon, 1,081 grains; nitrogen, 46 grains.

(2) Breakfast of oatmeal brose, treacle, bread, and bacon. Oatmeal, 5 ozs.; skimmed milk, $\frac{1}{2}$ pint; water, $\frac{1}{2}$ pint; treacle, 1 oz.; bread, 3 ozs.; bacon, 1 oz. The cost, $1\frac{1}{2}d$. Amount of carbon, 1,990 grains; nitrogen, 88 grains.

Here are two breakfasts, each costing the same amount, and each, therefore, at first sight equally economic; yet see what a difference there is in the working power supplied. The one gives 909 grains of carbon and 42 grains of nitrogen more than the other. The chemistry of foods cannot be neglected in arranging the dieting of the poor.

Breasts (A.-S., breast).—The breasts are composed of the common integuments, adipose tissue, and the lacteal glands and vessels. In the centre of each breast is the nipple, a conical eminence in the skin, of a rosy tint, and surrounded by a circle of a pink colour in virgins, and reddish brown in those who have suckled; this circle is called the areola, and on it are several small prominences, caused by the sebaceous glands which are situated beneath it, and discharge through several small ducts, opening on the surface, an unctuous fluid to protect the nipple. On the wrinkled skin of the nipple are the orifices of the lactiferous or milk-conveying ducts, which are surrounded by very minute hairs.

The mammary gland for secreting the milk is of a complex arrangement, several exceedingly minute vesicles being collected into little bundles of the size of a pin's head; these little bundles again uniting into lobules, and then again into lobes, connected together by areolar tissue. Each little bundle of ve-

sicles has its minute tubular duct or radicle, and these unite in the lobules into larger ducts, and in the lobes into the main ducts. The whole lobe is somewhat like a bunch of grapes, the stalks being supposed to be hollow. The ducts from the several lobes do not unite, but open into several small sinuses, or hollows, near the base of the nipple, from which sinuses several unconnected ducts pass up its centre, and, opening upon its surface, there discharge the milk. The areolar tissue enveloping the lobes is generally filled with fat. The breasts are, of course, supplied with nerves, arteries, and veins; the lymphatics are very numerous and go to the axillary glands.

Breathing.—A remarkable little book was published some years ago by Mr. George Catlin, an American artist, under the title of "Shut your Mouth and Save your Life." In it he told how he had discovered, during long intercourse with the wild Indians of the North American continent, that one of the leading causes of the many maladies by which men of all civilised countries are affected is their well-nigh unconquerable habit of breathing through the mouth.

The Indian child, he noticed, was never allowed to sleep with its mouth open. Its savage mother, as her infant fell asleep, never failed to press its lips together, till she had formed a habit that was to last for life, and when the child grew up, sleeping or waking, he kept his mouth shut. Thus it happens, according to Mr. Catlin, that the native races of North and South America enjoy such good health, and arrive at such physical perfection, and escape the deplorable diseases and mortality of civilised communities. Amongst many thousands of wild people he never saw or heard of a hunchback or crooked spine, or an idiot or lunatic, whilst premature death was decidedly uncommon.

It is quite evident that the nostrils are made for breathing through. They constitute the natural outlet of the lungs. The sides of the air passages are lined with hairs, which in some degree at least prevent the

ingress of noxious matters in the air we breathe. Dust is strained out, and it is confidently asserted by those who have tested the matter, that miasmas are prevented from entering the blood if one only breathes through the nose. Some persons have resided in malarious districts, and slept for years on the banks of malarious rivers, without suffering from any of the forms of fever that haunt such neighbourhoods. And they have ascribed their exemption entirely to their settled habit of breathing in this way. All, or almost all, the air taken thus into the lungs comes in contact with the membranes of the nose, and these are supposed to have some power of neutralising malarious and contagious poisons. It is also to be noticed that, by drawing in our breath only through the nostrils, the air is warmed by contact with the membranes before it reaches the lungs, and so inflammation and congestion of these organs are avoided.

No perfect sleep can be obtained with the mouth open. "Contrast," says Mr. Catlin, "the natural repose of the Indian child, educated to keep its lips closed, with the uncomfortable slumbers of the child of civilisation, with its little mouth wide open and gasping for breath. The firmly shut mouth, too, promotes good looks. Whoever yet saw an open mouth that was not insipid and unattractive? Keep your mouth shut, then, when you read, when you write, when you listen, when you are in pain, when you are walking, when you are running, and by all means when you are angry."

All crooked or constrained bodily positions affect respiration injuriously. Reading, writing, sitting, standing, speaking, or working with the trunk of the body bent forward is extremely hurtful, by overstretching the muscles of the back, compressing the lungs, and pushing downward and backward the stomach, bowels, and abdominal muscles.

Breathing.—*See also* RESPIRATION.

Brick-fields, Emanations from.

—It is not desirable to live, if it can be avoided, in the immediate vicinity of brick-

fields. The emanations from brick-fields and chemical works of various kinds are more or less deleterious to health, and the air of marshes or low-lying meadows is very apt to give rise to remittent or intermittent fevers, bilious fever, ague, etc.

Bringing up by Hand.—When, for some cause or other, the mother is unable to nurse her child, and when, as frequently happens, especially among the working-classes and the poor, the services of a wet-nurse cannot be had recourse to, nothing remains but that the infant be brought up artificially, or, as it is called, "by the hand." As, however, of the three methods by which the child may be brought up, viz., nursing by the mother herself, nursing by means of a wet-nurse, and that which we are now considering—this last, or bringing up by the hand, is the most difficult of all to accomplish satisfactorily; it is under this system that so many children die, and this it is which, in our large cities, is the cause of a great amount of the infant mortality which occurs there.

(1) **Substitute for Human Milk.** It will naturally arise in the mind of every mother who intends thus to rear her child to inquire as to what food will be best suited to take the place of the human breast-milk. To this question the answer is, that there are three kinds of milk, any one of which may serve as an efficient substitute for the breast-milk. These are the milk of the ass, the milk of the goat, and that of the cow—their adaptability being in the order in which they are here given. But although the milk of the ass, from its great resemblance to the human milk, is that which is most suited to act as its substitute, owing to the difficulty there is to procure it, and its great expense, it is put beyond the range of many, and cannot in consequence ever be of more than the most limited application.

(2) **Cow's Milk.** Something, therefore, that can be more universally employed must be had recourse to, and a substitute of this nature is to be found in cow's milk. It is at once the cheapest substitute that can be had

and that which comes within readiest access of all. The milk of the goat, like that of the ass, is sometimes used; but there are many reasons in the case of the former of a similar nature as those we saw to exist in regard to the latter, which preclude the possibility of its ever being of general application. Cow's milk, therefore, is that to which we naturally direct our attention, and a glance at its composition enables us to see how eminently it is fitted to act as a substitute for the milk of the human breast. In order, however, that the milk of the cow be brought to resemble human milk as nearly as possible, certain alterations require to be made, inasmuch as the milk of the cow contains more caseine and less butter and sugar than that of the human breast. A certain proportion of water must therefore be added, varying with the age of the child, and also a little sugar.

(3) **Dilution of Milk.** At the present time it is frequently very difficult in many of our large cities to obtain milk that has not been already adulterated with water, chalk, flour, and other things, so that in diluting the milk to render it fit for the infant, the possibility of its being already sufficiently diluted must not be forgotten. Till lately it was too much the practice to over-dilute the milk, so that the health of many infants was impaired through it.

(4) **Proportions of Milk and Water for first Ten Days.** For the first ten days or so equal parts of milk and water may be given, after which, till about the third month, the proportion should be two-thirds milk and one-third water, the proportion of water should then be gradually diminished, until the fourth or fifth month, when pure milk undiluted should be given. It is necessary that the milk given to the child be not given cold.

(5) **Temperature.** It should have the temperature raised so as to resemble as nearly as possible the milk of the human breast. For this purpose hot water is added to the milk when it is given to the infant in a diluted form, or when given pure it must be placed in boiling water till the tempera-

ture is raised to about 95° Fahrenheit, which is the temperature of the human breast-milk. The milk should, if it can possibly be so arranged, be from one cow. It not unfrequently happens that the milk of a certain dairy disagrees with the child, and when such is the case, different dairies must be tried until one has been got the milk of which agrees with the child, when it should not be readily given up.

(6) **Quantity.** The quantity given at a time is a point of very great importance, and requires to be carefully attended to in order to the success of this plan of feeding. Many parents disregarding this, or ignorant of the important part it plays in the artificial rearing of children, err by giving their infants too much at a time.

(7) **Intervals between Meals.** A regular method of feeding should therefore be practised from the first, and a sufficient interval must be allowed to elapse between one meal and another, in order that the act of digestion may be completed.

(8) **Intervals for and after First Month.** For the first month the child may be fed every two and a half or three hours during the day, and every four hours during the night. From this time onwards the child should be fed at regular intervals of every four hours. Many mothers are under the impression that in milk there is not sufficient nourishment to support the child; and, acting upon this mistaken idea, derange the infant's stomach by giving it solid food, such as biscuit and bread panada. This ought never to be done. There is in milk all those elements required to build up the tissues of the infant; and children that have been given nothing else till the teeth have appeared will in all probability be found in a much more healthy condition of body than those whose stomachs have been overtaxed by the administration of more solid food.

(9) **Methods of Feeding.** There are two methods which may be employed in this artificial system of feeding,—the one is to give the infant its meals from a spoon, the other is to allow it to suck from a bottle. The first of these two methods is one which

is frequently employed, but against which there are serious objections: thus, the feeding of the child may be hurried through the carelessness of the nurse, and it is well known that the flow of saliva is much greater during the act of sucking than it is when spoon-feeding is adopted, and as saliva is a very important aid to digestion, its loss cannot be sustained without ultimate injury to the child. The feeding-bottle should therefore be adopted from the first, and the child be allowed to take its meals regularly in this way.

(10) **Feeding Bottle.** In regard to the bottle that should be employed little need be said here. The variety of feeding-bottles is so great, and each one is said to be possessed of some little advantage over the other, that it is difficult to say which is best. But whatever bottle may be selected, one thing is absolutely necessary in regard to it, and that is that it be kept scrupulously clean. Too much attention cannot be paid to this. A bottle that is not kept in the most perfect state of cleanliness may be, and frequently is, productive of the white-mouth, the so-called "thrush," from which children, especially those who are thus brought up, are so liable to suffer. Every effort should therefore be made to prevent the occurrence of this affection.

(11) **Food to be freshly made.** No more food should be made than what will serve for one time. To make a large quantity, sufficient to serve the infant for two or three meals, on the ground that time or trouble are thereby saved, must never be permitted. Each quantity must be made afresh as it is wanted, and by attending to this much will be done to keep the infant in a sound state of health.

(12) **Food for Child when Teething.** When the teeth begin to appear, which is usually about the sixth or seventh month, the diet will require some alteration; but if the child be thriving well upon the milk alone, there should not be displayed too great a hurry to make a change. When, however, it is determined to supplement the infant's diet by the administration of articles of a more

solid nature, a great many suitable for this purpose present themselves to our notice. Of these may be mentioned Mellin's Food for infants and invalids, which has now become widely popular, Hard's Farinaceous Food, Robinson's Groats, Chapman's Entire Wheat, Nestle's Milk Food, Liebig's Infants' Food, rusks, tops and bottoms. Two or three of these may require to be tried in succession before one is got which suits the child in every way; but when that one has been found, its use should not be readily abandoned for experimentation with others.

(13) **Further changes of Diet.** When the larger double teeth make their appearance, it is regarded as a sign that a further change in the diet is now become necessary, and that the child has attained to that age when it is able to partake of animal food of one kind or another. Milk should yet, however, form a large part of every child's food; but, in addition, some beef-tea, chicken-tea, or mutton-broth, may be given once a day in the forenoon. As a change, a little meat gravy, with a mealy potato mashed up in it, may be given. An egg, lightly boiled, or one that has been placed for two minutes in boiling water, forms a very useful article of diet for young children, and one that is very nourishing. As before said, milk should still form a very large part of the child's diet. A little piece of some ripe fruit will not prove hurtful to most children at this age, and so may be given sparingly, care being taken to remove all stones. Nuts and other husk fruits, which are difficult of digestion, should be avoided. They may derange the child's stomach, and had better, on that account, be withheld altogether.

(14) **Ailments during Teething.** During this time the teeth will be every now and then appearing, and may give rise to different degrees of irritation; some children cutting their teeth without almost any trouble, and others suffering much with the appearance of every new tooth. Attention, must, therefore, during the whole of this period, be paid to the state of the stomach and bowels; and if the child should suffer from diarrhoea, some slight alteration in the diet should be

made, as it is always better, if it can possibly be accomplished, to remove diarrhoea in this way than to have recourse to medicines.

(15) **Treatment of Diarrhoea.** For this purpose a little arrowroot may be given—first with milk, and if that do not serve to check the diarrhoea, with water. This may be given for a day or two, during which time all animal food should be discontinued. The cream of milk may also be used instead of the milk itself. A little lime-water may also be added with advantage to the milk or cream. The proportion should be one table-spoonful of lime-water to three of milk or cream.

(16) **Treatment for Constipation.** Instead of diarrhoea occurring during the period of teething, the child may suffer from constipation. A little calcined magnesia will be found a very safe medicine to administer should this prove at all troublesome. A small quantity should be lifted upon the small end of a teaspoon and added to the milk which is being given to the child. Ripe fruit should also be given, as it exercises a laxative influence upon the bowels.

British Cholera.—See CHOLERA MORBUS.

Broccoli.—See CABBAGE.

Broiling.—This process of cookery is only roasting on a small scale, and has this advantage, that as the heat is continued for a short time, it does not render the outside of the lean so dry and parched, or the outside of the fat so rancid, as it is liable to become by roasting.

In broiling the heat should be very strong at first, and for the same reason as in roasting. For steaks and chops, broiling is, in every respect, a better process than frying. It produces a much more palatable and wholesome dish. To broil well, it is necessary to have a very glowing fire of hot coals, as free as possible from smoke and ashes.

Broken Arm.—See ARM, FRACTURE OF THE.
M. Q.

Broken Thigh.—See THIGH, FRACTURE OF THE.

Bronchitis (*Gr.* bronchos, the wind-pipe; *itis*, a termination used to imply inflammatory action).—The ailment known by this name is an inflammatory disease of the lining membrane of the bronchial tubes. It may be acute or chronic.

Bronchitis, Symptoms of.—Acute bronchitis is very liable to attack persons in the winter, and at times when the east or north-east winds are prevalent. It commences with the symptoms of a common cold; then there is first a feeling of chilliness and aching pains in the limbs; the patient is thirsty and feverish, with languor and headache, loss of appetite and restlessness. There is an uneasy feeling of soreness behind the sternum or breast-bone, increased on taking a deep inspiration, or on going out into the cold air. At first there is a dry, hacking cough, and very little phlegm is brought up; in two or three days the cough becomes looser, and the expectoration is more abundant; this is attended with relief to the patient, and the feeling of soreness and constriction in the chest then goes away. Wheezing sounds are heard in the air-passages, and may be felt when the hand is placed on the chest or back.

Bronchitis, Treatment of.—As soon as the patient feels ill, he should go to bed, and keep there till he is warm again; in this way an attack may be checked in a few hours; the air should be warm, and for this purpose a fire may be lighted, and the temperature kept up between 60° and 63° Fahr. There should also be a certain amount of moisture in the air, and to effect this a kettle of boiling water may be placed on the fire and the steam allowed to pass into the apartment; this may be done two or three times a day, and for about ten or fifteen minutes at a time. A warm bath before going to bed is also a most useful remedy; but the patient should be well dried, and put to bed directly afterwards, so

as to encourage free perspiration. Some are in the habit of taking a Turkish bath when they have an attack coming on; the only inconvenience in this procedure is the return home through the cold air afterwards.

Unless symptoms of debility should be present, there is no call for the use of stimulants. The patient will not care to eat any solid food at first; bread-and-milk, rice pudding, or one made of arrowroot, tapioca or ground rice may be given; broth or beef-tea or chicken-broth; jellies may also be given; as a rule, hot bland fluids are most enjoyed.

A hot linseed-meal poultice may be placed on the chest, but removed when it becomes cold. To prevent the moisture from wetting the clothes, a piece of oiled calico or gutta-percha tissue may be placed over the poultice. The patient should wear a flannel shirt next the skin. Cotton wool laid on the chest is often as good as a poultice. Turpentine stupes and sinapisms may be useful should milder measures fail to give relief.

Hot local applications, assisted by warm and moist air, and a few domestic remedies, will often suffice to cure an attack of acute bronchitis; if, however, the disease be neglected in its early stage, and the patient be exposed to draughts and cold air, serious symptoms may arise.

Bronchitis, Acute, in Children.

—Acute bronchitis in children is of much graver importance than in the adult, and a great deal of the mortality in childhood arises from this disease. In children the mischief is very apt to spread down the bronchial tubes, even to the smallest branches; while in the adult the main branches are, as a rule, the seat of the disorder; and it is in proportion to their downward extension that the relative danger lies.

Bronchitis, Acute, in Children, Symptoms of.—In children this disease begins with the symptoms of an ordinary

cold, but by degrees there is more fever and restlessness; the heat of the skin, as shown by the thermometer, is much above the average, the pulse rapid, the breathing quick and wheezing; the cough is now frequent and painful, and then the veins of the forehead and neck stand out, and the face is flushed. The child feels as if the chest were stuffed; and wheezing sounds may be felt on both sides when the hand is placed over the back or front of the chest. At bedtime, the fever and cough are generally worse, and the child is more restless. The tongue is moist throughout, the appetite bad, while there is more or less thirst. If the little patient becomes worse, the face may be pale while the lips are rather livid; the nostrils dilate with each inspiration, and the breathing is more hurried and difficult. Convulsions often precede a fatal termination; generally death takes place without much suffering, as the child passes gradually into a sleepy and unconscious state.



BRONCHIAL TUBES AND AIR VESSELS.

Bronchitis, Acute, in Children, Treatment of.

—The treatment should begin as soon as possible, as any delay is dangerous. The child should be placed at once in bed, and wrapped in a flannel blanket or sheet, and the temperature of the room kept between 60° Fahr. and 68° Fahr. A warm bath may be given at the outset, so as to encourage the action of the skin; the child should then be quickly dried and placed in bed. Cotton wool should be laid on the chest; a hot linseed-meal poultice

may be similarly used; occasionally a little mustard may be mixed with the linseed meal. The bowels may be opened by a dose of castor oil. Expectorant medicines should be given, such as ipecacuanha and senega, so as to enable the patient to expel the mucus which is being poured out into the bronchial tubes. At the same time the strength must be carefully supported; milk should be freely given, and ammonia; if necessary, a few doses of brandy may be put in also. Beef-tea or veal-broth may be given alternately; solid food is not to be given. When all the severe symptoms have subsided, the patient may return gradually to his usual diet, and the exhibition of some steel wine or other tonic will expedite the recovery.

Bronchitis, Chronic.—This is a very common disease, and is very prevalent during winter months, causing a great deal of mortality. It is most usually met with in middle-aged or old people. Cough, shortness of breath, and expectoration, are the three most constant symptoms of chronic bronchitis. This disease may occur as a consequence of *old age* merely. Again, it may come on as a sequel to an attack of acute bronchitis. Cabmen, porters, costermongers, bargemen, in short, any whose occupation exposes them to all kinds of bad weather, are extremely subject to this disease, and every year they become more wheezy and short of breath. Then any who have suffered badly from whooping-cough, or lung affections in childhood, are liable to winter coughs and chronic bronchitis.

Bronchitis, Chronic, Treatment of.—The best treatment for chronic bronchitis when it can be adopted is change of country, and passing the winter in the South of France, or in some place where the variations of temperature are less marked than with us, and where there is an absence of fogs and east winds. To the majority of people this is, of course, impossible, and the treatment must be directed to avoid as much as possible any exposure to cold or any

of the exciting causes of the disease. For those who are engaged in outdoor occupations, and exposed to all the inclemency of the weather, but little can be done except to alleviate any distressing symptoms that may arise. Thick boots should be worn, so as to prevent damp and cold feet. Such people should go out after sunset as seldom as possible, and they should not talk in the open air on a cold day, but breathe through the nose, as in this way the air is somewhat warmed before it passes down the bronchial tubes: a respirator is often of great service. For those who are not obliged to work, and can afford to spend the winter on the south coast, much benefit will be found by only going out on fine days, and by avoidance of night air.

Bronchitis, Chronic, Mixture for.—See MIXTURES.

Broths and Soups—These, properly made, with a due proportion of vegetable and animal food, without fat, are undoubtedly wholesome and nutritive, and may be said to serve both for meat and drink; but they must invariably be taken with bread. Many suppose that they are calculated only for those whose powers of digestion are weak, but this is a mistake, the reverse being generally the truth; because we find, almost universally, that where the digestive powers are weak and deranged, solid aliment agrees the best, particularly solid animal food, since it gives the stomach less to do, and rest to a weak organ is of great consequence; whereas liquid food is apt, in these cases, to dilute the gastric juice too much, besides which, it certainly requires a greater strength of digestive power for its perfect assimilation.

Brow Ague.—See TEETH, NERVOUS RELATIONS OF THE.

Brown, or Wholemeal Bread.
—Brown bread is more rich in flesh-making substances, bulk for bulk, than fine wheaten bread, because the outer husk of the grain,

which constitutes the bran, itself contains a large quantity of that material. When the dough is formed from *wholemeal*, instead of from fine flour, the cost of the bread is considerably diminished, at the same time that its bulk and weight are, even in a greater degree, increased. The addition of a little milk to the dough has the effect of still further raising the nourishing power of the bread, besides causing it to keep fresh longer; a pint of milk adds one pound to the weight of a loaf. A quarter of a pound of mashed potatoes, mixed in with every four pounds of flour or meal, also improves the keeping quality.

On the subject of brown bread Professor Church says: "Brown bread, as usually made and sold by bakers, is merely ordinary white bread, containing a dash of pollard or fine bran. Now this is not a satisfactory mixture, for the more valuable middlings, sharps, and fine pollard should not be excluded. Indeed, whole wheaten meal is now specially prepared by grinding up these products again and adding them to the flour, and the mixture is used for the manufacture of a true brown bread, preserving *all* the valuable constituents of the grain in due proportion. But it must not be thought that wholemeal bread, or any other kind of brown bread, does actually furnish more nutriment than white bread. It may be, and often is, richer in nutrients, but the presence of numerous rough, branny fragments so stimulates the action of the intestines, that the material is hurried along the digestive track without that complete digestion and absorption of its nutritive matter which white bread undergoes. Thus bread from flour from which all coarse particles have been excluded is preferred, not unreasonably, by men who have hard bodily labour to perform. But there are, on the other hand, many persons to whom wholemeal bread and biscuits are exceedingly useful in aiding the action of the bowels."

Brown bread should not be eaten habitually, if a person is healthy, because no one can be better than well; but if its use is deferred until there is a confined condition

of the system, it will be found an admirable remedy; but if the system had become accustomed to its use in health, there would be nothing to fall back upon in disease, and then medicine would have to be resorted to, instead of food—an unnatural, instead of a natural remedy.

Bruises, how Caused (*Fr.* *briser*, to break). Bruises are the consequence of a great variety of accidents, such as falls, blows, or severe pressure. Indeed, they occur in some feeble constitutions from the slightest possible degree of pressure. The well-known external appearance that constitutes a bruise arises from the extravasation of blood; that is, from the rupture of very minute blood vessels, and consequent escape of blood into the cellular tissue in the under skin. The gradual disappearance of a bruise takes place by the natural absorption of the extravasated blood by certain vessels, freely disposed throughout the animal frame, called, from their office, absorbents; and during this process of absorption the external appearance of the bruised part assumes a variety of hues, changing from its original purplish hue to a greenish, and then a yellow tint. The severity of this, as of most other accidents, may be of every grade; sometimes so slight as to demand no attention; at other times, where the force occasioning it has been great, the bruise is extensive, deep-seated, and intensely painful; perhaps some important viscus is involved in the mischief, and dangerous or even fatal inflammation may ensue.

Bruises, Nature and Variation of.—Bruises vary very much in extent, colour, size and situation. In the slightest form there is a small and superficial patch of a light or dark red colour, and attended with very little swelling. In the most severe cases, a soft swelling is formed as large as a child's head, or the whole of the limb is swollen and of a black or dark blue colour. The rapidity with which a bruise is formed varies according to the situation

of the injured part. Where the skin is in close proximity to subjacent bone, and is bound down by unyielding tissue, the blood is effused slowly; but in a blow upon the eyelids or upon the breast a large livid swelling is rapidly formed.

In fractures of the bones of the leg and forearm there is often extensive bruising, which is associated with the formation of large blebs on the surface of the skin, which are distended by black or purple fluid. In contusions of the scalp in children a large circumscribed collection of blood is often formed under the skin; this is usually soft at the centre and very hard at its margin, and feels very much like a depression in the skull. Sometimes in cases of contusion the bruise does not show itself at the part actually injured, but at some distance from it.

A large bruise, when fully developed, is of a purple colour, mottled with yellow and greenish-yellow patches. As the blood becomes absorbed the bruise fades, the purple gives way to changing shades of brownish-red, green, and light yellow. The changes commence at the margins of the bruise. The rapidity with which the disappearance takes place varies. The effused blood, even in very extensive bruises, is usually wholly removed by absorption, but occasionally a collection of fluid blood caused by an injury to an unhealthy individual, instead of becoming absorbed, sets up inflammation in the surrounding tissues and forms an abscess, which bursts and discharges unhealthy, ill-smelling matter, or pus, mixed with soft clots of blood.

Bruises, Treatment of.—In the treatment of recent bruises the first object is to check further effusion of blood. This may be best done by cold applications, and by elevating, if possible, the injured part above the level of the body, in order to retard the circulation. If the bruised parts be very tense and painful, some leeches may be applied near the margins of the dark-blue patch. After the acute stage of pain and heat has passed off, the treatment should be

directed so as to favour absorption of the fluids and to remove the swelling: for this purpose the most useful agents are the tincture of *arnica montana*, a lotion composed of two ounces of spirits of wine to twelve ounces of water, or a solution of sulphurous acid. The large, transparent blebs which form over very extensively bruised surfaces should be pricked with a sharp needle and then covered with cotton wool, which will absorb the dark-coloured, fluid which is thus allowed to trickle away.

Bruises, Homœopathic Treatment of.—For simple bruises and contusions make a lotion of 1 teaspoonful of *Arnica* tincture to 4 tablespoonfuls of water, and apply to the part affected by lint doubled twice or thrice and soaked in the lotion. Cover with oiled silk, and change the lint or renew the dipping as soon as the lint is dry.

Bruises, Sprains and, Embrocation for.—See EMBROCATIONS.

Bruises with Inflammation, Liniment for.—See EMBROCATIONS.

Brunel, Case of.—An accident which befell Mr. Brunel, the famous engineer who designed the *Great Eastern* steamer, will show the danger there is of whatever may be in the mouth falling into the windpipe. Mr. Brunel was pretending, greatly to the delight of a group of little children, to swallow a sovereign. He had put it into his mouth for the purpose of his playful deceit, when he was suddenly tickled to laughter by the startled surprise of the credulous youngsters about him, and the piece slipped into his windpipe. All the usual efforts of sputtering and coughing proving of no use in getting it up again, he gave over in despair, and summoned his doctor, who, coming armed with all the instruments of his surgical case, applied them in all the various ways according to the best skill of his art. His attempts, however, to extract the sovereign were in vain, and he called to his aid some of the

most eminent surgeons of London. Consulting with these, all the contrivances they could suggest were tried, but with no more successful effect. At last, in despair of their power of doing good by any ordinary means, it was proposed to resort to the serious surgical operation of cutting into the throat, notwithstanding that they were perfectly aware of its great risk to life. After they had resolved upon this desperate remedy, and just as they were on the point of resorting to it, Mr. Brunel cried out, "Turn me upside down!" Fortunately catching at the suggestion, they did as they were bidden, and taking the patient by the heels, and lifting them up, while his head was allowed to hang down, they gave him a vigorous shake, and out came the sovereign, rolling upon the ground.

Buffon on Pythagorean or Vegetarian Diet.—See PYTHAGOREAN OR VEGETARIAN DIET.

Bulam Fever.—See YELLOW FEVER.

Bunion (*Fr. bigne*, swelling from blow). This well-known affection consists in a subcutaneous swelling situated on the inner side of the ball of the great toe. In its earlier stage it is a thin-walled sac, filled with clear fluid, and then causes very little uneasiness, but subsequently, in consequence of constant pressure and friction, becomes hard and tender. Sometimes—particularly after active exercise—the swelling becomes very painful and inflamed, and forms an abscess. The development of a bunion is caused, in most instances, by a distortion of the great toe, and is much accelerated by the use of tight boots and by much walking. When the bunion is young, firm pressure with the fingers, or a sharp tap with a heavy object, may cause it to burst and bring about a cure. In those cases where the swelling has existed for some time, and become hard and painful, very little can be done except to recommend boots made large and roomy over the toes, and with the sole thicker at the outer than at the inner edge, so that the foot in walking may be thrown more upon

the outer part. When the bunion becomes very tender, and the skin covering it is red and inflamed, the treatment should be immediate, and consist in rest and the application of one or two leeches and warm fomentations.

Burns.—Accidents resulting in burns are of very frequent occurrence, particularly amongst the children of the poor, who are so often, either from negligence or necessity, left to themselves in apartments where there are fires or lighted candles, but particularly the former, resulting in burns occasioned by the clothes catching fire. The first witnesses of such accidents, and the sufferers themselves, when old enough to comprehend what ought to be done, should immediately adopt the best means to exclude the access of air, and particularly of draughts of air, as much as possible; to apply water or damp coverings for the purpose of extinguishing the fire; and, thirdly, to remove, as expeditiously as can be done without encouraging the flame, all the ignited articles of dress. Thus, instead of running to the door or out of doors, which fans the flame and extends the injury tenfold, keep the doors and windows shut, and let the first efforts be directed to wrapping up the sufferer in something sufficiently large and thick to cover and exclude from the air all the ignited portions of the dress, as a great coat, a blanket, or a carpet; unless, as is sometimes the case, the article of dress which is in flames can be *instantly* torn off, which may be done if it be a cap, a handkerchief, or a child's pinafore; but do not run the risk of prolonging the mischief by attempting in the first place to undress the sufferer. It is as well to mention here an instance of very serious aggravation of the injury which resulted from fruitless attempts to strip off the trousers from a youth, who had the misfortune to have fire-works set alight which he carried in his trouser pockets. Had he courageously introduced his hand and thrown out the fire-works, ignited or not ignited, and had one of the numerous witnesses wrapped a great

coat closely round the burning clothes, whilst another with water, which was nigh at hand, had presently soaked it well, the youth's life would not have been endangered, and he would have been saved many weeks of acute pain and suffering.

While women persist in increasing their inflammability to the highest degree by covering themselves with the greatest possible quantity of the most combustible material, they will be sure to be the occasional victims of a conflagration. Most of the accidents from fire happen to women, and generally when expanded for a ball or a party in some spread of flimsy stuff, with which, like a gaudy butterfly, they hover about a light or blazing fire.

With presence of mind, which is rare under such circumstances, there would be little danger, for the nearest rug, blanket, cloak, or any woollen article, caught up and rolled about the person would easily extinguish the first spark. Bystanders should prevent any one whose dress has caught fire from running about. If the witness of the accident should be a male person, let him strip off his coat, if nothing better can be more readily had, and, holding it stretched out with his two hands, catch the burning person, and quickly inclose her in such a way with the garment as to wrap her body tightly around.

Burns, Distortions from.—Under this division may be also classed those distortions which arise from burns and other extensive destructions and ulcerations of the skin, in consequence of the contraction of the scar in the process of healing. When these injuries take place in the front of the neck and face, the resulting deformity is sometimes frightful. The space between the chin and the breast is filled up by a tense discoloured and corrugated cicatrix, which bows the head forward and draws down the features so as to expose the inner surface of the lower eye lid and keep the mouth constantly open. When they occur in the flexures of the joints, as in front of the elbow, the cicatrix extends in the

form of a hard and rigid web between the humerus and forearm, the joint being permanently bent. Such deformities may sometimes be partly removed by an operation; but it is extremely painful, and often unsuccessful.

Burns, First Treatment of.—If a person has been badly burnt, as by the clothes taking fire, the greatest care must be taken in their removal not to remove also some portion of the skin or flesh to which they will adhere. This may be avoided by making the clothes quite wet. It will be also necessary to cut the clothing more or less in removing it. The first thing to be done in the treatment of burns, whether superficial or deep, whether extending over a large or small surface, is to exclude atmospheric air. This may be done by keeping the part wrapped up in cloths saturated with sweet oil; or a layer of flour may be placed over the burnt surface, and then covered with cotton. Carron oil (so called from the ironworks where it was first used), which is a mixture of equal parts of linseed oil and limewater, is one of the best remedies for a burn.

A surgeon, giving a few short hints as to what should be done in an emergency for persons severely burnt or scalded, says that "in moving the injured person great care is required so as not to add to the effects of the shock which the system has already experienced. In removing the clothes, it is necessary to do so in such a manner as to avoid tearing off the burnt or blistered skin, which affords a useful protection for the injured surface. The second object is to cover the burnt or scalded parts with a material which will exclude the air. For this object flour answers best, and it should be freely applied. Cotton wool, likewise, if at hand, may be wrapped round the injuries. Lint or linen rags, steeped in water, may be used. These might be covered with oiled silk if available. Carron oil might be applied with rags laid over the burns. If carbolic acid be at hand, a mixture of one part with forty of water, or of linseed or

olive oil, is a most useful application; the chief object of these several applications being to exclude the air. If the sufferer be greatly exhausted, it would be necessary to give brandy or other stimulant, and if the pain be intense, to administer ten to twenty drops of laudanum, or to give some similar sedative until professional aid can be obtained."

Attention must be given to the secretions, which must be kept free. Any symptom which may indicate inflammation of the head, chest or abdomen must be reported, and opiates, or whatever is ordered, must be carefully given, while the strength is kept up with good food.

Burns, Treatment of, with Bicarbonate of Soda.—Dr. Waters, of Salem, speaking recently before the Massachusetts Dental Society, stated that bicarbonate of soda, such as is used for cooking purposes, or any other alkali in neutral form, would afford instantaneous cessation of pain from the severest burns and scalds and would cure such injuries in a few hours. Deliberately dipping a sponge into boiling water, the doctor squeezed it over his right wrist, producing a severe scald around his arm, and some two inches in width. Then, despite the suffering occasioned, he applied the scalding water to his wrist for half a minute. Bicarbonate of soda was at once dusted over the surface, a wet cloth applied, and the pain, the experimenter stated, was almost instantly deadened. Although the flesh on the wrist was literally cooked down to the sweat glands, and the wound was of a nature to be open and painful for a considerable time, on the day following the single application of the soda, the less injured portion was practically healed, only a slight discoloration of the flesh being perceptible. The severer wound in a few days, with no other treatment than a wet cloth kept over it, showed every sign of rapid healing.

Butchers, Duration of Life in.

—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Butter:—Butter consists chiefly of milk-fat, but it contains considerable quantities of the other constituents of milk. It is obtained most readily from cream, but it is also got by the direct churning of milk. Butter which has been made from sweet cream has a pleasanter taste, and keeps longer than that made from sour cream; this difference is caused mainly by the presence of much casein or curd in the butter from sour cream.

The taint, or unpleasant and peculiar taste which butter often possesses, can be avoided if precautions are taken to prevent the access of any kind of odorous vapours to the milk or cream. Nothing is so strongly absorptive of odours or volatile flavours as butter. It absorbs and retains the vapours from cheese and meat, and especially from every kind of decaying vegetable or animal matter. If the cows have been fed with any strongly flavoured food, such as swede turnips, the butter made from the milk of that food will be perceived in the taste as well as in the milk itself.

Butter always has some salt added to it, and this salt must be quite pure. If it is not free from magnesium compounds, it imparts a bitter taste to the butter. Even fresh butter has some salt in it, from $\frac{1}{2}$ to 2 per cent. Salt butter should not contain as much as 8 per cent., but more has been detected in inferior samples. If butter is to be kept some time, or exported, it receives, besides salt (2 to 5 per cent.), a small quantity of sugar—not, however, more than 8 oz. to the hundredweight.

Butter, when taken in moderate quantity, spread cold on bread, is nutritious, and, in general, not difficult of digestion; but, if eaten freely, it is certainly pernicious, particularly to such persons as have weak digestive organs. Melted butter and salt butter are unwholesome.

Butter, Adulteration of.—Perhaps at one time there was no article of food so largely adulterated as butter. The adulteration consisted chiefly of melted fat, which was brought from the butchers in

the form of suet or otherwise, and was mixed with the butter after undergoing a certain process. Large quantities of this fat used to be sent abroad, and came back to us in the form of tub butter, which, although not injurious to health, defrauded the purchaser by substituting an inferior article, and a different one from that which he thought he was buying. The Adulteration of Food Act has, however, been very efficacious in putting an end to this form of adulteration. Lard, again, was at one time very largely used as an ingredient, the dishonest vendor obtaining the extra profit resulting from the difference in value between the lard and butter.

Butter, Imitations of.—Butter is rarely adulterated with injurious impurities, although the purified animal fats honestly sold under the names of butterine, oleomargarine, etc., are no doubt often mixed with the inferior grades of butter. These contaminations, however repulsive and disgusting to refined palates, are not as a rule likely to shorten life.

Butter, Purity of, How to Test.—The purity and wholesomeness of butter can be ascertained by the microscope, chemical analysis, and certain special tests. But these tests cannot be applied except by experienced analysts. It is easy, however, to learn a good deal about some adulterations practised on butter, by simply melting a little of it in a glass tube plunged in hot water. After a time the water, the curd or casein, and the true butter or milk-fats separate into layers. The water remains lowest; and on its surface, and mingled with a portion of the melted fat, lies the curd; while the remainder of the fat constitutes a layer resembling oil, and remains at the top. Now, there should not be more than 8 to 13 per cent. of water in good butter, so the watery layer should not exceed in volume one-eighth of the whole butter. Nor should the casein, or curd, be very conspicuous.

It is impossible to give an exact analysis

of fresh butter which shall fully represent its components. The following figures of Professor Church, however, show the average proportions of its most important constituents when of good quality:—

	In 100 parts.	In 1 lb.
		oz. gr.
Water. . . .	.10·0	1 262
Casein	1·0	0 70
Milk-fat	87·7	14 14
Milk-sugar. . . .	0·3	0 21
Common salt . .	1·0	0 70

It is hardly necessary to say that butter contains too small a quantity of flesh-forming material for it to be reckoned in comparison with its high amount of heat-giving substance.

Butter-milk.—Butter-milk is milk deprived of its oily matter by churning or agitation. It is nourishing, cooling, and diluent, and is used, sometimes with great advantage, in wasting, or a bad habit of body. Good butter-milk is frequently of much service as a remedy in pulmonary consumption, particularly in the early stages of the florid species so often met with in the young and blooming.

Cabbage.—All plants of the cabbage tribe appear to contain a peculiar essential oil, whence the strong odour of cabbage water; this matter is liable to produce offensive effects on the stomach. The vegetable should therefore be boiled in two successive waters, in order to free it entirely from the noxious ingredient, and at the same time render its texture soft and digestible. Care, however, must be taken not to boil it too much; that is to say, to bring it into a soft and pappy condition, for vegetables that are thus overboiled are as difficult to digest as those that are not sufficiently cooked. The cabbage tribe includes the common white and red cabbages, savoys, greens, cauliflower, broccoli, etc. On the whole the cabbage may be considered more nutritious than the turnip. The inner and younger leaves contain much more water than the older leaves outside.

Cæcum (*Lat.* *cæcus*, blind, or concealed).—The cæcum is the first part of the large intestine, and extends downwards from the point where the small intestine enters the large one. It may be described as a sort of pouch, generally about two and a half inches long, and wide.

Calisthenics (*Gr.* *kales*, beautiful or graceful; *sthenos*, strength).—In its modern acceptation the term calisthenics is understood to imply the art, science, and practice of healthful exercise of the body and limbs, and the promotion of strength and graceful movement. As a preliminary course to regular gymnastics, young people are generally practised in the simple movements known as calisthenics, or movements without gymnastic appliances. These exercises are equally fitted for both sexes, and their importance as promoters of health can hardly be over-estimated. They will not be found to be in any way beyond the capacity of young ladies, but on the contrary, will be of great value in giving flexibility and strength to the muscles. The beginner, whether male or female, should not attempt to do too much at commencing. Practice will give increased strength and skill, and in a comparatively short time the pupil will be equal to greater exertion; but, above all things, the novice must beware of overwork. Nothing is so injurious. Practice should not be indulged in either just before or just after a meal; an hour or two before or after is the best time.

Calls for Nourishment. — See NOURISHMENT, CALLS FOR.

Calls of Nature, Inattention to.—"Of all the causes which originate and establish habitual constipation," says Dr. Burne, in his work on Habitual Constipation, to which we are under obligations for several of the paragraphs of this article, "there is none certainly so general as inattention to the calls of nature. A misplaced sense of delicacy, an absolute disregard of the calls of nature, some engagement from

which people do not at the moment liberate themselves, the inconsiderate or ill-planned situation of the closet, or of the out-of-door *cabinet d'aisance*, all conspire to counteract the operations of nature, and to originate constipation."

To acquire the habit of regularity, Locke, who was a physician as well as a philosopher, advises that "if any person, as soon as he has breakfasted, would presently solicit nature, so as to obtain a stool, he might in time, by a constant application, bring it to be habitual." He says, "I have known none who have been steady in the prosecution of this plan, who did not in a few months obtain the desired success."

"It is well known," says Hamilton in his remarks on purgatives, "that the alvine evacuation is periodical; and subjected to the power of habit; if the regular call is not obeyed, the necessity for the evacuation passes away; and the call being again and again neglected, habitual costiveness is the consequence."

Men of literary pursuits are naturally more prone to the error of inattention to regular times of relieving the bowels than practical men. All the personal habits of the latter are necessarily more methodical. So every variety of general and local disorder of the stomach and bowels is more prevalent among the former. When costiveness proceeds from this cause in persons who live temperately, and take sufficient exercise, its usual consequences are one or two of the local affections of the lower bowels.

Ladies often fall into the same error as literary men in the neglect of regularity. How often does it happen that, feeling it not quite convenient to retire to the closet at the moment they experience an admonition, they defer it till a more favourable opportunity; but this opportunity having arrived, their efforts are powerless; the bowels will not then act, and disappointment and discomfort ensue. Delicacy on their part is carried to a most pernicious extent in England, while on the other side of the Channel the reverse obtains—happily,

perhaps, as regards health and ease. An English gentleman, while in France, having one day occasion to go to the *cabinet d'aisance*, found it occupied by a lady, the door not being bolted. Embarrassed, he retreated to his apartment, where, in a few minutes, another lady of the family came to him, saying, "Sir, the place is unoccupied!" The Englishman blushed for an instant, but quickly recovering, said to himself, as he made his way thither, "Well, if Madame feels no delicacy in this matter, why should I?"

It should be remembered that the exoner-ation of the bowels is a natural and neces-sary function, without which health cannot be enjoyed or preserved, and some resolution therefore should be exercised in order to promote this object. Besides, if we regard it from another point of view, and reflect for an instant, that by neglecting the evacu-ation of the lower bowel, we permit foul and filthy matter to be retained within the body—which nature has ordained should pass away—we feel another and strong incentive to encourage and secure the habit of daily evacuation.

Delicacy in this particular should be dis-countenanced, and trivial and even pressing engagements should be suspended in order to obey this injunction of nature.

"It is to be feared," says Dr. Burne, "that indolence and an absolute disregard of, or even resistance to, the calls of nature are not the least frequent causes of habitual constipation—feelings which have been yielded to, perhaps, without considering the penalty they must in the end inflict. How many persons are there who do not obey the calls of nature unless urged by an im-perative necessity which they cannot resist! Little do such persons know the misery and ill-health they entail upon themselves when they allow such habits to grow upon them, and surely when they are apprised of the evil consequences that must accrue, they will make an effort to avert them by scru-pulous attention to the regular exoner-ation of the bowels."

The want of proper conveniences is most

severely felt by society at large, though now less unquestionably than formerly. The situation of closets is often ill-judged. If of ready access, too exposed; if remote, in-convenient. In number, too, they are apt to be sadly deficient; one perhaps for a whole family, and this most unfortunately placed. Then, again, the out-of-door *cabi-net d'aisance* is sometimes situated at a distance from the house, and the access to it often runs in front of the sitting-room windows, the locality itself being often cold, damp, and repulsive.

In the construction of houses, too much attention cannot be given in determining the situations in which the water-closets are to be placed, in order that the access may be easy and the egress private; but, above all, let the number be sufficient. In every house, one at least should be appropriated to each sex; and one should be attached to the visitors' apartment exclusively. Persons go to a vast expense in fitting up apart-ments and providing entertainment for their friends, but they neglect the one thing necessary to their comfort and enjoyment.

Calves'-foot Jelly.—See GELATINE.

Calves' Liver.—According to Payne's analysis, calves' liver contains the under-named constituents in the following propor-tions:—

	In 100 Parts.
Water	72.3
Nitrogenous matter. . . .	20.1
Fat, etc.	6.1
Mineral matter	1.5

Cancer (*Lat. cancer, a crab*).—Cancer is a hard tumour, intersected with firm whitish divergent bands, found chiefly in the excretory glands, or skin, which is capable of contaminating other parts, either by direct communication or through the medium of the absorbents; it is attended with acute and lancinating pains, and gene-rally terminates in a fetid and ichorous ulcer. Its most common seats are the female breast and womb, the lip, tongue, and testicle.

Cancer, Causes of.—A cold and variable climate; a deranged state of the general health; the change effected in the constitution of women at the time when the usual monthly discharge altogether ceases; with blows, and other mechanical violence, are the most common exciting causes of this complaint. But frequently there is no apparent cause, and when any of the above exist, we must almost invariably consider a disposition in the organ or part affected to take on the diseased actions of cancer, to be necessary to the actual development of this particular malady.

Cancer, Distinction of.—The distinguishing marks of this disease are its stony hardness to the feel; its being perfectly circumscribed, so that its whole extent and limits, unconnected with the surrounding parts, may be distinctly felt; it never, or very rarely, occurring but in the excretory glands or skin, and especially its power of contaminating other parts in its vicinity, either by direct communication or through the medium of the absorbents.

Cancer, Symptoms of.—When cancer takes place in the breast, it usually commences with a small indolent tumour that excites little attention. In process of time this tumour is attended with an itching, which is gradually exchanged for a pricking, a shooting, and at length a lancinating pain, a sense of burning, and a livid discoloration of the skin. And however difficult it may be to determine the precise point of time in which the scirrhus first becomes converted into a cancer, where these symptoms are united there can be no risk in calling the tumour by the latter name. Adherent bands are now formed in the integuments, which become puckered; while the nipple is drawn inwards by suction, and in some instances clearly disappears, the tumour rises higher towards the surface, and feels knotty to the finger; at the same time that the subcutaneous vessels are distended with blood, and show themselves in dark contorted ramifications. The march

of this disease may be slow or rapid, for it varies considerably in its pace; but at length the integuments give way in a few points to the ulcerative process, and a small quantity of caustic ichor is thrown forth; the ulceration continues to advance, spreading wider and deeper, till a considerable extent of surface becomes exposed, and a broad excavation is scooped out, with a discharge of a most peculiar and offensive fetor. The ulcer sometimes affords a delusive hope of recovery by its granulating; but the granulations are soft and spongy, are liable to bleed from the loose texture of the new vessels, and frequently while one part is covered with them, another part is sloughing.

When cancer attacks the uterus, it is known by tensive lancinating pains in this organ, shooting through the region of the pelvis; indurations in the part sensible to the touch; a preceding and immoderate flow of whites or the menses, or both. As soon as the ulceration has worked to the surface of the organ, there is a sanious, or bloody, or mixed discharge, characterized by the peculiar stench of the disease. By degrees the external parts swell, and the swelling sometimes extends along the thigh.

On the tongue, lip, or any other part of the skin which is attacked by this disease, it usually commences with a small wart or pimple, which hardens by degrees, grows irritable and malignant, contaminates the neighbouring glands, and finally ulcerates.

Cancer, Treatment of.—With regard to the treatment of cancer, all that can be done is to check the disease as far as possible by its early removal, and thus endeavour to alleviate suffering and prolong life. In advanced stages of the disease, palliative treatment, both local and constitutional, must be had recourse to; but death will sooner or later supervene, and all that can be done is to make the end as easy as possible.

It is proper to add here a caution against those who advertise to cure cancers. It may be taken as a rule that those who advertise to cure are ignorant or unprincipled, or

both; and the cases narrated are either purely fictitious (as has been often proven), or the disease removed was not a cancer, but some of the many diseases liable to attack the skin; for everything presented to "cancer doctors" is called a cancer. These cases result too seriously for intelligent persons to trust them to any but educated advice and treatment.

Canine Teeth.—See PERMANENT TEETH.

Capers.—These are the flower buds, and sometimes the unripe fruit, of a plant of Southern Europe. They are prepared and preserved by pickling in vinegar. Several substitutes are employed for capers, one of these being the unripe fruit of the garden nasturtium or Indian cress.

Capillaries (*Lat. capillus*, hair; from *caput*, the head).—These minute tubes branch in every direction through the body. They vary very much in size, some of them being no more than the 5000th part of an inch in diameter: the most common size, however, is about the 3000th of an inch. The minute tubes may sometimes be seen in the white of the eye when it is bloodshot. In this state of the white of the eye the little capillaries are gorged with the red globules of the blood. The difference between a minute capillary and a minute artery consists in this, that an artery has three coats, but a capillary has only one coat, which consists of a very delicate transparent membrane with little dots, or nuclei, in it.

Carbolic Acid (*Lat. carbo*, coal).

—This is a colourless, oily fluid which has been much used of late for purposes of deodorization and disinfection; when weak, its smell is rather pleasant. It is prepared from coal-tar. The solid acid may be placed in a saucer about the room, or, still better, some of the solution may be sprinkled about. It conceals all odour and arrests putrefactive changes, and seems to have the power of stopping the growth of fungi. Tar

fumes, vinegar, or acetic acid and ammonia, are old remedies for a similar purpose, but they are not very effectual.

Carbonic Acid Gas, Fatal Properties of (*Lat. carbo*, coal).—The importance of a sufficient supply of pure air to our well-being, and even to actual existence, can scarcely be over-estimated, and it is probable that a large majority of the diseases which cut off generation after generation of our race, assail their victims through impure, unwholesome, or poisoned air. Almost every one has heard of the celebrated Grotta del Cane, near Naples, where emanations of carbonic acid gas from the floor of the cave so poison the air that dogs, because they breathe a stratum of air only a few inches above the surface of the ground, fall insensible soon after their entrance, and would die in a few minutes if not removed to a purer atmosphere.

Another extraordinary natural example of the existence in fatal proportions of carbonic acid gas is found in the famous Poison Valley of Java. An eye-witness—Loudon—thus describes a visit to this valley:—

"We took with us two dogs and some fowls to try experiments in this poisonous hollow. On arriving at the foot of the mountain, we dismounted and scrambled on the side about a quarter of a mile, holding on by the branches of trees. When within a few yards of the valley, we experienced a strong, nauseous, suffocating smell, but on coming close to its edge this disagreeable odour left us. The valley appeared to be about half a mile in circumference, oval, and the depth from thirty to thirty-five feet; the bottom quite flat; no vegetation; strewn with some very large (apparently) river stones; and the whole covered with the skeletons of human beings, tigers, pigs, deer, peacocks, and all sorts of birds. We could not perceive any vapour or any opening in the ground, which last appeared to us to be of a hard, sandy substance. It was now proposed by one of the party to enter the valley; but at the spot where we were this was difficult, at least for me, as one false step would have

brought us to eternity, seeing no assistance could be given. We lighted our cigars, and, with the assistance of a bamboo, we went down within eighteen feet of the bottom. Here we did not experience any difficulty in breathing, but an offensive, nauseous smell annoyed us. We now fastened a dog to the end of a bamboo eighteen feet long, and sent him in; we had our watches in our hands, and in fourteen seconds he fell on his back, did not move his limbs or look round, but continued to breathe eighteen minutes. We then sent in another, or rather he got loose, and walked in to where the other dog was lying. He then stood quite still, and in ten minutes fell on his face, and never afterwards moved his limbs; he continued to breathe seven minutes. We now tried a fowl, which died in a minute and a half. We threw in another, which died before touching the ground. During these experiments we experienced a heavy shower of rain; but we were so interested by the awful sight before us that we did not care for getting wet. On the opposite side, near a large stone, was the skeleton of a human being, who must have perished on his back, with his right hand under his head. From being exposed to the weather the bones were bleached as white as ivory. I was anxious to procure this skeleton, but any attempt to get it would have been madness."

Carbonic Acid, Household Test for.—

It is well known that carbonic acid gas is present in air, as it is breathed out of our lungs, and the following method has been devised for testing the amount of its impurity. It is called Dr. Angus Smith's household test for carbonic acid, and is applied as follows:—Procure a bottle holding ten and a half fluid ounces, fill it with the air of the room you wish to examine, by blowing it in with a bellows or sucking it in through a glass tube pushed down to the bottom of the vial; pour in half an ounce of lime-water, and, after corking tightly, shake well for two or three minutes.

If, after a short time, there is no milky appearance of the lime-water, you may know

to a certainty that the ten ounces of air in the bottle do not contain enough carbonic acid to form a visible precipitate of carbonate of lime (chalk) in the lime-water, and this has been proved by careful experiment on a large scale to be equal to less than $\frac{1}{100}$ of one per cent. of carbonic acid in the sample of air tested; a quantity which has been agreed upon by some high sanitary authorities as the limit beyond which the accumulation of this impurity (and others, perhaps much more noxious, which seem to always accompany it when it arises from human or animal respiration) is injurious to health, and should not be permitted to occur.

Carbuncle (*Lat. carbunculus*, little coal).—A carbuncle is most frequently situated where the tissues underlying the skin are of a dense fibrous character, such as the nape of the neck. Carbuncles vary in size, sometimes being as large as an orange. They are very hard, brawny, dreadfully painful, discharging matter from several apertures, and usually attended with considerable constitutional disturbance, such as fever, hectic, etc., the condition being indicative of blood-poisoning.

Carbuncle, Treatment of.—

With regard to treatment, it must be both constitutional and local. The strength must be kept up by giving raw eggs, cream, milk, beef-tea, mutton-chops, and, when stimulants are necessary, by the administration of wine, ammonia, and bark, etc.; hot fomentations, opiate poultices; and free incision must be made through the thickened implicated tissues.

Carbuncles are in their nature so much like extensive ill-conditioned boils, that it is often difficult to draw the line; and cases of middle character sometimes occur which some eminent surgeons would call a boil, and others equally eminent a carbuncle, and which we have known a more wary and sagacious surgeon denominate a carbuncular boil. A carbuncle, like a boil, appears at first in the form of a small, painful pimple;

but an extensive, hard, and depressed tumour is soon discoverable around its base, sometimes as large as a saucer. Frequently several pimples appear on the same tumour, and as the carbuncle advances to suppuration, it breaks, and discharges at each pimple, and a similar core is ultimately formed, and presents itself at each opening. Carbuncles, unlike boils, are generally solitary; when, therefore, you see a large, deep-red and deep-seated tumour under the skin, usually on the neck or between the shoulders, in its progress opening by ulceration of the skin at several points, and discharging bloody matter, and afterwards a pulpy membranaceous core, you may denominate it a carbuncle. It occurs generally in persons who have passed the middle period of life, is itself a sign of constitutional debility; and although the pain is not so much complained of as in boils, probably from less of keenness in the sensibility of such patients, it is much more serious in its nature, and may terminate fatally.

Care in the Kitchen.—No dangerous substances of any kind should ever be allowed to obtain admission into the kitchen. It is so easy to take a pinch of white arsenic instead of salt, if they have been inadvertently brought into proximity to each other, and sprinkle death into the pot, that a cook who has every one's fate, more or less, between her thumb and forefinger, cannot be too careful. Cooks and all women entrusted with the preparation of food should be cautioned against sticking pins and needles in the bosom of the dress on any pretext whatever.

Care of the Body.—See PRESERVATION OF HEALTH.

Caries.—See TEETH, DECAY OF THE.

Carpenters, Disease peculiar to.—See BLACKSMITHS.

Carpenters, etc., Duration of Life in.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Carpets in Rooms.—The ordinary carpet which hugs the wall, nailed down to remain for weeks or months, as if it were a solid part of the house, can be kept free of unwholesomeness by no periodic beating. It gives out its dust at every step upon it. Between the carpet and the wall is a little rill of fluff and dust. A room charged with carpet-dust can never be healthy. Nature has fitted up the lungs with a superb filtering mechanism, and when this is in order, it succeeds in preserving us from breathing the dust, but throws it back to the throat, and the dust is unconsciously swallowed or eaten.

No carpet should entirely cover the floor of any room, and no carpet should be nailed down. The floor should be stained and varnished all over, or at least for the distance or space of two feet from the walls, and a square carpet with border should then be laid in the middle of the room, rugs or mats being put down in other places where they may be required.

Carrots.—These delicious and wholesome roots contain no starch. They are more watery than parsnips of the same size, but they are more generally liked. The carrot is grown in all parts of the globe. Its alimentary constituents are as follows:—

Nitrogenous, or flesh-forming	
parts	1·48
Heat-giving ingredients for	
the support of life	11·61
Ashes	0·81
Water	83·10
100·00	

In its wild state, the carrot is found plentifully in Britain, both in cultivated lands and by waysides, and is known by the name of bird's-nest, from its umbels of fruit becoming incurved from a hollow cup, like a bird's-nest. In this state its root is whitish, slender, and hard, with an acrid, disagreeable taste, and a strong aromatic smell, and was formerly used as an aperient. When cultivated, it is reddish, thick, fleshy, with a

pleasant odour, and a peculiar, sweet, mucilaginous taste. The carrot is said by naturalists not to contain much nourishing matter, and, generally speaking, is somewhat difficult of digestion. It is much used for flavouring soups, haricots, etc., and is generally eaten with boiled beef.

Cartilages (*Lat. cartilago*, gristle).

—These are smooth white elastic substances, sometimes called gristle, which unite bones together, and cover the ends of those which move upon each other, as in the joints. They resemble bone in appearance, but are much softer. There are thin layers of this substance between the joints, or vertebræ, of the spinal column, about the sixteenth of an inch in thickness, which facilitate the bending movement of the back; and also forming a sort of cushion, they serve to diffuse and diminish the shock in walking, running, and jumping. Cartilage is found in all the joints. It is also added to the end of bones to increase their length, as in the front part of the ribs, which consists entirely of cartilage. Bone itself is in the first instance deposited in the form of cartilage, which is abundant in the young. As age advances, however, much of the cartilage—that, for example, which connects the ribs with the breast—becomes ossified.

Carvers and Gilders, Duration of Life in.—*See* DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Cases of Emergency with Children, Seven Rules for.—(1)

—If the child be suddenly attacked with vomiting, purging, and prostration, send for a doctor at once. In the meantime put the child for a few minutes in a hot bath, then carefully wipe it dry with a warm towel and wrap it in warm blankets. If its hands and feet are cold, bottles filled with hot water and wrapped in flannel should be laid against them.

(2)—A poultice of Indian meal, or one made of flax-seed meal to which one quarter part of mustard flour has been added, or

flannels wrung out of hot vinegar and water should be placed over the belly.

(3)—Five drops of sal volatile in a teaspoonful of water may be given every ten or fifteen minutes.

(4)—If the diarrhœa has just begun, or if it is caused by improper food, a teaspoonful of castor-oil, or of the spiced syrup of rhubarb, should be given.

(5)—If the child has been fed partly on the breast and partly on other food, the mother's milk alone must now be used. If the child has been weaned, it should have its milk-food diluted with lime-water, or should have weak beef-tea or chicken-water.

(6)—The child should be allowed to drink cold water freely.

(7)—The soiled diapers or the discharges should be at once removed from the room, but saved for the physician to examine at his visit.

Castor Oil.—*See* MEDICINES, HOME

Catalepsy, or Trance (*Gr. kata*, down; *lepsis*, seizing, from *lambano*, I take).—Catalepsy, or trance, is a condition in which an individual—very frequently, but not always, an excitable, hysterical female—suddenly seems to lose all consciousness of surrounding objects. They remain fixed in one position, but if that is altered by anybody standing by, the new position is maintained instead of the former. In this state the individual remains for a time, varying from minutes to hours, or days, and then suddenly recovers, knowing nothing of what has passed in the interval. The complaint is rare and many of its symptoms singular, so that some physicians who have never witnessed an example of it are disposed to regard it in every case as an imposture; but there is no doubt of its being a real disease. Cataleptics having been interred alive has given rise to much uneasiness in the minds of many, but the period which elapses between death and burial in our country is generally sufficient to prevent such an occurrence. Allied to catalepsy is ecstasy, where the individual seems buried in con-

templation of some serious subject. This, too, mostly occurs in women, and is mainly hysterical.

Catalepsy, Causes of.—A highly nervous or irritable temperament is the chief predisposing cause of catalepsy, and the disease is capable of being caused by terror or other violent emotions of the mind, and by various corporeal irritations, particularly those of the stomach, suppressed menstruation, repelled chronic eruptions, and plethora.

Cataract (*Gr. kata*, down ; *arasso*, I dash).—Cataract is a disease of the crystalline lens. The lens becomes opaque, and obstructs the entrance of light so completely that, when the cataract is fully formed, the patient can merely distinguish light from darkness. The pupil loses its natural blackness, and the whitish surface of the opaque lens is seen just behind it. Cataract is not on the eye, as is popularly supposed, but in it. The mistake arises from confounding cataract with the whitish opacities of the cornea already referred to.

Treatment by any kind of medication is entirely useless; the only remedy is the removal of the lens by operation. Of course, in the absence of the lens, the light cannot be focussed accurately upon the retina, and people who have undergone this operation have no distinct vision until a convex lens of glass is placed in front of the eye. As no artificial lens can imitate the power of the crystalline to accommodate its focus to different distances, two glasses are required, one for distance and one for reading.

Catarrh, or Cold in the Head, Homœopathic Treatment of.—The chief symptoms of this disorder are to be found in watering of the eyes, which feel hot and inflamed; a general feverishness, especially in the head, stoppage of, and running from the nose, accompanied with sneezing, all these being sometimes followed by a troublesome cough. The principal remedies, in conjunction with general absti-

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nence and the promotion of perspiration by a warm bath, are *Aconitum napellus* for symptoms as named above; *Belladonna* for sore throat and tickling in the throat causing cough; *Mercurius* for running from the nose and frequent sneezing; and *Nuxvomica* for stoppage in the nose accompanied by constipated bowels. The dose for either remedy is one drop of the tincture in one tablespoonful of water every two, three, or four hours, according to the severity of the attack.

Camomilla in the same proportions and at the same intervals of time is a favourite and useful remedy for this complaint in women and children.

Catarrhal Ophthalmia.—See OPTHALMIA, CATARRHAL.

Catechu and Cayenne Gargle.—See GARGLES.

Cathartic Draught.—See DRAUGHTS.

Cauliflower.—See CABBAGE.

Causes of Disease.—See DISEASE, CAUSES OF.

Caviare.—This is the roe of the sturgeon. Caviare is usually consumed in a decomposed state, and then cannot be looked upon as wholesome. Fresh caviare is a very different article, and to appreciate it does not demand an expressly acquired taste.

Cavities of the Body (*Lat. cer'vus*, hollow).—The cavities into which the body is divided, and in which lie the different organs, are:—(1) the SKULL; (2) the CHEST; (3) the ABDOMEN; (4) the PELVIC CAVITY. For an enumeration of the organs which these cavities contain, see under name of each separate cavity as enumerated above.

Cayenne (from *Cayenne*, in Guinea, where it was originally produced). This is the most acrid and stimulating spice with which we are acquainted. It is a powder prepared from several varieties of the capsic-

cum—annual East India plants, of which there are three so far naturalized in this country as to be grown in the open air; these are the Guinea, the Cherry, and the Bell pepper. All the pods of these are extremely pungent to the taste, and in the green state are used by us as a pickle. When ripe, they are ground into cayenne pepper, and sold as a condiment. The best cayenne, however, is made in the West Indies, from what is called *Bird* pepper, on account of hens and turkeys being extremely partial to it. It is imported ready for use.

Cayenne, Adulterations of.—

Cayenne pepper is frequently adulterated with brickdust, salt, red ochre, corn-meal, red lead, and Venetian red, rice and cinna-bar.

Celery.—The characteristic odour and taste of celery is derived from a peculiar essential oil. The quantity of this oil, however, in celery as eaten, is too minute to be shown in the following analysis. The plant, it will be seen, contains some sugar. Freshly cut celery is composed as follows:—

	In 100 parts.		In 1 lb.
		oz.	gr.
Water	93.3	14	406
Albumen . . .	1.2	0	84
Mucilage and			
Starch	1.6	3	112
Sugar	2.2	0	154
Cellulose . . .	0.9	0	63
Mineral Matter.	0.8	2	56

Celery, when well boiled, is nourishing and wholesome.

In the marshes and ditches of this country there is to be found a very common plant, known by the name of smallage. This is the wild form of celery; but, by being subjected to cultivation, it loses its acrid nature, and becomes mild and sweet. In its natural state it has a peculiar, rank, coarse taste and smell, and its root was reckoned by the ancients as one of the “five greater aperient roots.” There is a variety of this in which the root becomes turnip-shaped and large. It is called *Celeriac*, and is extensively used

by the Germans, and preferred by them to celery. In a raw state, this plant does not suit weak stomachs; cooked it is less difficult of digestion, although a large quantity should not be taken.

Cellars (*Lat. cella*, store-room). Even the smallest and poorest house ought to have a cellar which is well ventilated and kept free from moisture as far as possible. Dampness promotes the growth of fungi (moulds, etc.), and, whether in this way or in some other, is a powerful agent in propagating disease. Extensive experience with diphtheria in a rural district leads the writer to confirm the statement that the breeding-grounds of diphtheria in the country are generally well-recognised places, where it is constantly liable to break out anew, and the constant condition of these localities is structural dampness of the houses.

Cellular Membrane (*Lat. cella*, a store-room; *membrana*, skin).—This is a loose and very thin membranous structure, which fills the space between the muscles and between them and other solid parts, connecting them together without interfering with their functions. It may be seen everywhere between the muscles and the skin, of a light shining colour, giving a smoothness and softness to the surface of the body. It forms a great many little cells, which are kept moist by a watery vapour exhaled from the minute branches of the arteries; and if it should be exhaled in greater quantities than can be removed by the absorbents, it fills and distends the cells and constitutes cellular dropsy, or *anasarca*.

Cellulose.—This, according to Gregory, is one of the substances constituting the cellular tissue of plants, being the material which forms the walls or sides of the vegetable cells, while *lignine* is that which fills those cells or covers their walls. Like starch, it consists of carbon, hydrogen, and oxygen, and is convertible into starch and sugar. It is not, however, all food that is taken into the stomach that is digestible. Cellulose,

though apparently digested by many of the lower animals, is not digested by man. It therefore passes through the bowels unchanged. Another substance, called gum, is not absorbed in the stomach or bowels, and therefore cannot be regarded as nutritious.

Cementum (*Lat.* *cæmentum*, a rough, hard stone [limestone], from which mortar was made).—The *cementum* is a layer of hard tissue covering the roots of the teeth. The *dentine*, or so-called ivory, constitutes the bulk of the tooth. It is, so to speak, its framework, giving each tooth its shape and size. The *pulp*, commonly but incorrectly called the nerve, occupies a cavity in the centre of the tooth, and corresponds to its general form. The pulp supplies nourishment to the tooth. When it dies, the tooth loses its translucency, the dentine loses its sensibility and gradually changes its colour. Nerves and blood-vessels enter through the minute openings at the extremity of the root, and pass through the small canal in the root to the pulp cavity. With the exception of this small aperture, the pulp is entirely surrounded by solid dentine.



THE ENAMEL OF THE TEETH (Magnified).

The accompanying illustration shows the structure of the enamel of the teeth, highly magnified.

Centipede, Bite of.—See POISONOUS INSECTS.

Cerate, Turner's.—See OINTMENT.

Cerebellum (*Lat.* *cerebellum*, diminutive of *cerebrum*, brain).—The *cerebellum*, or "little brain," technically speaking, is the postero-inferior, or lower and hinder

division of the brain. It is believed to be endowed with the function of regulating in unison and harmonizing the various muscular movements.



THE UPPER PART OF THE CEREBELLUM.

The upper surface of the cerebellum is the subject of the accompanying illustration: *a*, anterior or square lobe; *b*, posterior superior lobe; *c*, posterior inferior lobe.

Cerebral Meningitis (*Lat.* *cerebrum*, brain; *Gr.* *me'ninx*, *meninggos*, a membrane; *itis*, an affix implying inflammation).—The disease is inflammation of the membranes covering the brain, and is always extremely serious. Children and elderly persons are more commonly attacked by it than others, but it may occur at any age. With children the noticeable symptoms are disturbed sleep, a cast or rolling of the eyes, dilated pupils, convulsions. With older persons who can tell their symptoms, there is severe headache, intolerance of light, want of sleep, mental disquietude; sometimes unnaturally acute hearing; constipation; sometimes sudden loss of speech, and delirium.

Cerebral Meningitis, Treatment of.—The doctor should be sent for without delay; the patient being meanwhile kept in a darkened room, from which every sound and every person except the nurse is excluded.

Cold applications will be ordered at once, and to do any good must be kept up steadily, uniformly, and over a definite surface, never for a moment being allowed to become warm.

There is no need whatever for soaking the bed while keeping up the cold application to the head. See that the patient's body is not chilled by clothing made damp through careless use of cold water; and keep his feet warm.

Obstinate constipation will be one of the symptoms, and purgatives will be ordered, the object being to produce very free movement of the bowels. If the full effect of the doses is not secured, report at once to the doctor. The most profound tranquillity of body and mind must be preserved; every noise must be suppressed, and no sort of moving about in the room allowed which can in any way be avoided. No food is to be given without permission, and then it is to be of the simplest kind, such as milk, thin gruel, rennet, whey, etc. The kind and quantity of food must be prescribed by the physician. Milk for either children or adults will probably be all that is required for some little time.

If in the doctor's absence there should at any time be symptoms of sinking—cold sweat, fixed and glassy eyes, stupor, palsy—the nurse may give, on her own responsibility, an ounce of wine in hot water, and an ounce of strong beef-tea, if it is at hand: for a child half the quantity. The feet should be warmed, and the doctor sent for immediately. On no account, if the patient is a baby, is he to be rocked in a cradle or chair, or moved backwards or forwards on the knees. Keep him in bed with head raised on a thin pillow.

In convalescence no visits are to be allowed; no general conversation in the room, no reading, no thinking, if possible. The room must still be shaded and perfect rest enforced until all possibility of relapse is over. Relapse in such cases means death, and the attendants and family friends are the ones who are generally responsible for imprudence which may produce it.

In *Spinal Meningitis* the symptoms differ decidedly; there is excessive pain in the back, extending to the extremities. The body becomes rigid, but from time to time there are convulsive starts. Paralysis com-

mences in the lower limbs, and gradually extends. There is nothing to do but to follow the doctor's directions carefully, and should the case be long continued, to guard against bed sores. Leeches and cups will probably be ordered at first.

Cerebro-Spinal Fever, Symptoms of.—This is a disease which was but little if at all known before 1837, when it prevailed with great virulence in various parts of France. It is an acute epidemic disease, characterized by profound disturbance of the central nervous system, and marked by shivering, giddiness, intense headache, delirium, and spasms of various muscles; there is great prostration, and occasionally a purple eruption appears on the skin. Age does not seem to have much influence on this disease; children, old people, adults, all suffer during an epidemic; males, however, seem more liable to it than females. Season has a remarkable effect upon this malady; it occurs especially during the cold months. Fatigue, cold, overcrowding, foul air, and dirty dwellings have been put down as exciting causes of this disease, but at present very little is known for certain on these points.

Cerebro-Spinal Fever, Treatment of.—The treatment of cerebro-spinal fever by remedies is very unsatisfactory; it is doubtful if the administration of any medicine has been beneficial in doing more than relieving symptoms; for this purpose opium or morphia has been given to allay pain and spasms. Sulphate of quinine in large doses, and given early, appears to have benefited some cases; bleeding and mercurial preparations are of no value, and may do harm. The diet must be generous and nourishing, and consist of milk, beef-tea, etc.

Cerebrum (*Lat. cerebrum, the brain*).—The brain, which, not only in man, but in the higher animals, constitutes so large a proportion of the nervous system, has in itself no power of sensation, for it may be,

and after accidents very often is, cut without the individual—although quite conscious—having any sense of pain. Neither is its presence necessary to the continuance of the mere animal life of the body; for if—as has been ascertained by experiment—the brain, say, of a rabbit be gradually and carefully removed, the rabbit will not only continue to live, but to perform the various functions of animal life.

Without doubt, the brain is the organ upon which depends the manifestations of will, intelligence, memory, and such like,

optic thalami and anterior to the corpora quadrigemina; *l*, the tentorium cerebelli, which separates the cerebrum from the cerebellum; *m*, the frontal sinus; *n*, the perpendicular plate of the ethmoid bone; *o*, the nasal cartilage; *p*, the superior maxillary bone; *r*, the Eustachian tube or trumpet, forming a communication between the ear and the upper part of the pharynx; *s*, the soft palate; *q*, the pharynx.

The base of the brain is illustrated in Fig. 2: 1, the olfactory nerve; 2, the optic nerve; 3, the third pair of nerves; 4, the fourth



FIG. 1. THE BRAIN.

and by which the conscious mind of man is linked with the processes and actions of the body by means of other portions of the nervous system.

A vertical section through the skull, displaying the right half of the brain, is given in Fig. 1: *a* represents the frontal lobe; *b*, the parietal lobe; *c*, the occipital lobe; *d*, the cerebellum; *e*, the medulla oblongata; *f*, the spinal cord; *g*, the pons Varolii; *h*, the corpus callosum, or stratum of fibres, connecting the two hemispheres of the brain; *i*, the fifth ventricle, lying between the layers of the septum lucidum at the anterior part; *k*, the third ventricle, placed between the

pair of nerves; 5, the trigeminus; 6, the sixth pair; 7, the seventh pair; 8, the eighth pair; 9, the ninth pair; *a*, superior convolution of the cerebrum; *c*, middle convolution; *b*, the occipital lobe; *d*, the pons Varolii; *e*, the medulla oblongata; *f*, the crura cerebri; *g*, the anterior part of the square lobe of the cerebellum; *h*, the anterior perforated spot; *i*, the infundibulum; *u*, the tuber cinerium; *z*, the corpora albicantia; *t*, the commissure; *l*, the under surface of the cerebellum; *x*, the longitudinal fissure; *m*, the flocculus or sub-peduncular lobule of the cerebellum; *n*, the notch between the hemispheres; *y*, convolutions of the cerebrum.

Another illustration of the same subject is given in Fig. 3: *a*, the anterior lobe; *b*, the middle lobe; *c*, the occipito-parietal fissure; *d*, the cerebellum; *e*, the medulla oblongata; *f*, the pons Varolii; *g*, optic commissure; *h*, bulb of the olfactory nerve; *i*, crus cerebri.

The left half of the human brain is shown in Fig. 4. In this figure the brain has been

Varolii; *g*, the medulla oblongata; *y*, opening in the lower part of the fourth ventricle; *l*, *v*, aqueduct of Sylvius, a canal establishing a connection between the third and fourth ventricles; *f*, *g*, the corpora quadrigemina; *s*, the superior peduncles of the pineal gland; *n*, above this is the posterior part of the floor of the third ventricle; *m*, the anterior part of the floor of the third ventricle;



FIG. 2. BASE OF THE BRAIN.

divided by a median vertical section from before backwards. *l*, the lateral wall of the third ventricle, formed by the optic thalamus; *e*, *d*, *f*, the curve of the corpus callosum; *t*, the septum lucidum; *k*, the fornix; *z*, the corpora albicantia or mamillary tubercles; *b*, the tuber cinereum; *i*, the infundibulum; *2*, the optic nerve; *c*, section of the anterior commissure; *w*, section of the posterior commissure; *p*, the pineal gland; *s*, the peduncle of the pineal gland; *o*, the pons

w, the arbor vitae of the middle lobe of the cerebellum; *y*, opening establishing a communication between the general ventricular cavity and the spinal subarachnoid space. It is situated at the inferior angle of the fourth ventricle; *g*, *w*, the valve of Vieussens, occupying the interval between the two superior peduncles of the cerebellum.

Cervical Vertebrae (*Lat.* *cervix*, the neck; *vertebra*, a joint; from *verto*, I



FIG. 3. THE BASE OF THE BRAIN.

turn).—The name applied to the upper vertebræ of the spine situated in the neck, or between the base of the skull and the shoulders. (See VERTEBRÆ.)

Cesspools, Effluvia from.—Although the carbonic acid and its vile com-

woefully vitiate the atmosphere when they gain access to it. Amongst these some of the most important are the effluvia from drains, sewers, and cesspools, which have often proved most dangerous causes of disease. In one instance, out of twenty-two boys at a school situated near Clapham, who watched the opening and cleaning of a drain which had been choked up, twenty were seized within three hours with violent vomiting, diarrhœa, prostration, and fever, and two of these twenty died from the effects of the poison being inhaled into their lungs while standing over the drain. There is little doubt that the effluvia with which sewer-gas is loaded, escaping through stationary wash-stands, bath-tub waste-pipes, and water-closets, are a fruitful source, perhaps indeed the great cause, of typhoid fever, diphtheria, and scarlet fever epidemics in the cities and chief towns of our country.

In a series of investigations made some years since, it was found that a mouse, exposed in a cage to the air of a cesspool, within three inches of the surface, although it was well fed at intervals, died on the fifth day. Dogs thus exposed suffered from vomiting, diarrhœa and febrile symptoms,



FIG. 4. THE LEFT HALF OF THE BRAIN.

panions given off from the lungs of man and beast are some of the most common impurities, there are many other deleterious ingredients, both gaseous and solid, which

restlessness and loss of appetite. One of the principal gases contained in sewer emanations is sulphuretted hydrogen, and it was found that a very minute quantity of this

gas in common air was sufficient to produce serious symptoms, rapid and irregular respiration, extraordinary rapidity of the pulse, and diarrhoea. A puppy exposed to less than two per cent. of sulphuretted hydrogen in common air was destroyed in two and a half minutes without a struggle; and so small a proportion as 0.428 per cent. killed another in an hour.

Chamois Leather.—Chamois leather is often found a very useful article of clothing, more particularly for those troubled with rheumatism or anomalous chronic pains in different parts of the frame. It is sometimes covered externally with flannel, and when worn next the skin, as it sometimes is, it is perforated at intervals with small holes for the sake of necessary ventilation.

Change in Bones.—*See* BONES, CHANGE IN.

Change of Air.—An occasional change of air may be said to be almost necessary to the perfect well-being of every man, and there are some diseases in which a change of air is by far the most powerful means of restoration to health. This is especially true of those diseases caused by breathing unchanged air, of which consumption is one of the chief. There are many lesser failures of health, however, such as languor and dyspepsia, which require change of air. It is found of great service in many chronic coughs and colds. The change decided on must, of course, be made with reference to the nature of the case. The delicate and consumptive, for example, must not be sent to a bleak, cold situation, even though these will often be much the better for a bracing atmosphere. Whooping-cough is pre-eminently benefited, and in many cases indeed cured, by a change of air, especially by a change to sea air, which is highly invigorating and favourable to health, partly because of its constant agitation by wind and tides, and partly because many of the deteriorating influences which affect land air are absent from it.

Change of Air in Rooms.—*See* AIR IN ROOMS, CHANGE OF.

Changes in Abdomen during Pregnancy.—During the early months of pregnancy little appreciable enlargement of the abdomen takes place, and in some cases it is even less prominent than in the unimpregnated state. The reason of this is that the womb, being heavier than usual, at first sinks in the pelvis instead of rising. After the third month, however, a swelling manifests itself of a rounded form at the lowest part of the belly, which goes on increasing until it occupies the whole abdominal cavity. As it ascends it pushes the navel before it, causing it to be on a level with the surrounding skin, and towards the end of pregnancy, to project beyond it as a distinct prominence.

Changes in Breasts in Pregnancy.—About the second month of pregnancy, certain well-marked changes may be observed taking place in the breasts. The patient generally complains of a feeling of fulness and tightness which she has not before experienced, and a sensation of tingling or pricking is also felt. If the breasts of a woman who is thus suffering are examined, they will be found to be hard and knotty to the touch; the nipple will be seen to be more prominent, and the flesh-coloured ring by which it is surrounded, and which is called the “areola,” will be found to have assumed a much darker hue, and to have increased considerably in size.

Changes in Treatment of Disease.—*See* DISEASE, CHANGES IN TREATMENT OF.

Changes, Periodical, in Disease.—*See* PERIODICAL CHANGES IN DISEASE.

Changing Clothes.—Cleanly people need not be told of the necessity of a frequent change of clothing, but those who are not so should be reminded that a con-

tinuous wear of the same dress is not only uncleanly, but unfavourable to comfort and health.

Character and Voice, Connection between.—The following remarks on the connection that exists between character and voice have been made by a well-known American traveller:—

“I have noticed, as a fact that struck me as being peculiar, that the bravest and largest wild animals always had deep voices, and that they were generally melodious, full of music, as it were, while the small fry, which would run from a common cur, had high, sharp voices. I have hunted with some of the bravest men, the best scouts, and the most famous hunters in the West, and I found that they also had heavy tones as a rule, and deduced from this that the highest order of animals—those that were brave and daring—were always deep in voice, and that their intonations never jarred on the ear.”

Charcoal.—First in efficiency, cheapness and availability of artificial antiseptics, deodorizers, and disinfectants, is charcoal. The disinfective properties of charcoal are due almost entirely to its great porosity. Liebig states that the pores in a cubic inch of beach charcoal must, at the lowest computation, be equal to the surface of one hundred square feet, and some chemists have estimated it at more than double this amount. By reason of this peculiar physical structure, the charcoal becomes endowed with a remarkable capacity for absorbing and condensing gases; and hence, when it is exposed to an atmosphere containing the putrid products of decomposition, it quickly absorbs them. Thus far the action of charcoal is strictly mechanical, but it does not stop here, for when once the miasmata becomes stored in the pores of the coal, a secondary and chemical action is promoted by reason of the intimate contact of the former with the air condensed also in the charcoal. This contact causes rapid oxidation to take place, and as oxidation is a

species of combustion, the putrid matters are burned up and destroyed as effectually as if they were passed through the ignited coals of a furnace.

Freshly burned and broken charcoal will absorb from ten to fourteen per cent. of its own weight of gases and moisture from the atmosphere during a period of twenty-four hours, and it is capable of absorbing ninety times its own volume of ammonia, or fifty-five times its own volume of sulphuretted hydrogen. The disinfecting and deodorizing power of fine charcoal depends upon its being both fresh and dry. Charcoal loses its absorptive and disinfecting power in a great degree by use, but can be restored to full efficiency by moderately heating it.

Charcoal Air Filters.—The use of charcoal air-filters, consisting of a layer of charcoal in coarse powder, varying in size, according to circumstances, between a small bean and a filbert, have been strongly recommended for ventilating purposes. The charcoal is placed between two sheets of wire gauze, fixed in a frame, and can be readily applied to buildings, ships, to the air-shafts of sewers, to water-closets, and various other purposes. All the impurities of the air are absorbed by the charcoal, so that a current of pure air alone passes through the filter; and in this way pure air may be obtained from exceedingly impure sources. The efficiency of the charcoal appears never to diminish if it is kept dry, and its pores are not choked up by dust.

Charcoal, Antiseptic Properties of.—Properly applied, charcoal is an arrester of putrefaction, and as such it is recommended in the preservation of animal food, meats, fish, etc. Animal matter in an advanced state of putrefaction loses all offensive odours when covered with a layer of charcoal; it continues to decay, but without emitting any ill odour. All kinds of charcoal, however, are not equally effective, wood charcoal and the charcoal derived from the carbonization of peat being the most valuable.

Charcoal as Tooth Powder.

—See HYGIENE OF THE MOUTH.

Charcoal, Disinfecting Properties of.—Night-soil can be deodorized and removed without offence by covering it with fine charcoal. Advantage has been taken of the power of charcoal to absorb noxious gases, to construct a respirator for protection against the inhalation of malarious and infected air. It consists of a hollow case of wire gauze, filled with coarsely powdered charcoal, and fitted over the mouth and nostrils by straps. All the air that enters the lungs must pass through this charcoal sieve, and in so passing is deprived of the noxious vapours or gases it contains. For persons engaged in hospitals, dissecting rooms, the holds of ships, or in the vicinity of sewers, this device is most valuable.

Charcoal Poultice.—See POULTICES.

Charcoal, Purifying Properties of.—Foul water, filtered through a layer of powdered charcoal, is decolourized and purified. Sugar refiners render brown sugar white by passing it in solution through animal charcoal. Ale and porter, subjected to the same treatment, are not only decolourized, but deprived of their bitter principles. In case of poisoning with vegetable poisons, such as opium, morphia, and strychnia, one of the best immediate antidotes that can be given is powdered charcoal in water; this absorbs the poisonous principle, and renders it inactive. The decolourizing action of charcoal may be illustrated by filtering porter, port wine, or water coloured with ink, through a small quantity of animal charcoal. The filtered liquor will be deprived of smell, taste, and colour.

Charges, Medical.—See MEDICAL FEES.**Chase's Remedy for Ague.**—See AGUE, CHASE'S REMEDY FOR.**Cheerfulness of Mind a Medicine.**—So efficacious is a cheerful state of

mind, from the healthful nervous influence which it diffuses through the frame, that surprising recoveries occasionally happen which can be ascribed to no other cause but this. A singular but instructive instance fell under the observation of Sir Humphrey Davy, when, early in life, he was assisting Dr. Beddoes in his experiments on the inhalation of nitrous oxide. Dr. Beddoes having inferred that the oxide must be a specific for palsy, a patient was selected for trial, and placed under the care of Davy. Previously to administering the gas, Davy inserted a small thermometer under the tongue of the patient to ascertain the temperature. The paralytic man, wholly ignorant of the process to which he was to submit, but deeply impressed by Dr. Beddoes with the certainty of its success, no sooner felt the thermometer between his teeth than he concluded the talisman was in operation, and in a burst of enthusiasm declared that he already experienced the effects of its benign influence throughout his whole body. The opportunity was too tempting to be lost. Davy did nothing more, but desired his patient to return on the following day. The same ceremony was repeated; the same results followed; and at the end of a fortnight he was dismissed, cured—no remedy of any kind, except the thermometer, having ever been used.

Quacks profit largely by taking advantage of this principle of our nature; and regular practitioners would do well to bestow more pains than they do in assisting their treatment by well-directed moral influence. Baglivi was deeply impressed with this sentiment when he said, "I can scarcely express how much the conversation of the physician influences even the life of his patient, and modifies his complaints. For a physician, powerful in speech, and skilled in addressing the feelings of a patient, adds so much to the power of his remedies, and excites so much confidence in his treatment, as frequently to overcome dangerous diseases with very feeble remedies, which more learned doctors, languid and indifferent in speech, could not have cured

with the best remedies that man could produce."

Another remarkable incident occurred during the siege of Breda in 1625. When the garrison was on the point of surrendering from the ravages of scurvy, a few phials of sham medicine introduced by the Prince of Orange's orders as the most valuable and infallible specific, and given in drops as such, produced astonishing effects: *such as had not moved their limbs for months before were seen walking in the streets, sound, straight, and whole*; and many who declared they had been rendered worse by all former remedies, recovered in a few days, to their inexpressible joy.

Cheese.—There are three sorts of cheese—whole-milk cheese, skim-milk cheese, cream cheese; these kinds, however, pass by insensible gradations from one to the other. So-called whole-milk cheeses are frequently produced in dairies where a small quantity of butter is also made, and where some cream is abstracted from the milk. If evening milk is skimmed, and then mixed with the morning milk, half-skim cheese will be the product. The skimming of milk, too, may be carried out so completely as to leave very little milk-fat for the cheese, or else it may be done so imperfectly as to affect very slightly the richness of the product. Cream cheese also varies considerably in composition, according to the quantity of cream added to the milk employed for its production. Neufchâtel and some other soft kinds of cream cheese are very rich in milk-fat. In Stilton cheese there is a smaller proportion of this constituent; but still Stilton is much richer than Cheddar cheese, which generally represents the average composition of a whole-milk cheese, made from rich milk. Cheshire, and single and double Gloucester cheese, exhibit a slight reduction in the proportion of their milk-fat; American cheese is usually lower still in the proportion of this ingredient, while Dutch cheese is a fair illustration of a true skim-milk cheese. We may add that cream-cheese contains less water and casein,

and more fat, than whole-milk or skim-milk cheese. The chief constituents of an average sample of double Gloucester cheese are shown in the following analysis given by Professor Church, from whose "Handbook on Food" much of this information has been drawn:—

	In 100 parts.	In 1 lb. oz.	gr.
Water	34.3	5	214
Casein	29.2	4	291
Milk-fat	29.6	4	322
Milk-sugar . . .	2.0	0	140
Phosphates . . .	3.1	0	217
Common salt . .	1.8	0	126

For 1 part of flesh-formers in the above kind of cheese there are little more than 2½ parts of heat-givers, reckoned as starch.

One pound of this cheese could form nearly 5 ozs. of the dry nitrogenous substance of muscle or flesh.

Cheese, Colour of.—The colour of cheese is naturally a pale yellow or straw colour. The darker yellow and orange hues often seen are due to the colouring matter known as *arnatto* or *annatto*, a dye which is obtained from the pulp in which the seeds of *Bixa Orellana*, a small South American tree, are imbedded.

Cheese, Digestibility of.—Cheese varies in digestibility with its texture, age, and composition. As a rule, it cannot be said to be easily attacked by the gastric and intestinal secretions. A moist, crumbly cheese, fairly rich in fat, is, however, more rapidly and completely digested than the drier and more nitrogenous skim-milk sorts. Some kinds of cheese acquire a strong odour and flavour by keeping. The blue mould or mildew which appears in old and very ripe cheeses, such as Stilton, is a vegetable fungoid growth. Cheeses are also liable to be attacked by minute animals. The common cheese-mite is *Acarus domesticus*. The cheese-fly, *Piophilus casei*, deposits its eggs in the cheese, where they reach larval stage, becoming the cheese-maggots known as "jumpers." All these forms of animal and vegetable existence cause a considerable

consumption of the food-substance of the cheese on which they live, and so lower its nutritive value. Usually, however, the decayed cheeses to which these remarks apply are consumed in small quantities as food adjuncts merely, on account of their rich flavour or supposed power of aiding in the digestion of other articles of food.

Cheese, Skim-Milk.—See SKIM-MILK CHEESE.

Cheese, Toasted.—See TOASTED CHEESE.

Chemical Composition of Air.
—See AIR, CHEMICAL COMPOSITION OF.

Chemical Composition of Bread.—The chemical composition of bread is thus explained by Professor Johnston in his popular and interesting work, "Chemistry of Common Life": "The quantity of water which well-baked wheaten bread contains amounts on an average to about forty-five per cent. The bread we eat, therefore, is nearly one-half water—it is, in fact, both meat and drink in one.

"The flour of wheat and other kinds of grain contain water naturally; but it absorbs much more during the process of conversion into bread. One hundred pounds of fine wheaten flour take up fifty pounds, or half their weight of water, and give a hundred and fifty pounds of bread. Thus, a hundred pounds of English flour and a hundred and fifty pounds of bread contain respectively—

The flour contains	The bread contains
lb.	lb.
Dry flour . . . 84	84
Natural water . 16	16
Water added . . .	50
100	150

"One of the reasons why bread retains so much water is, that during the baking a portion of the starch is converted into gum, which holds water more strongly than starch does. A second is that the gluten of

flour, when once thoroughly wet, is very difficult to dry again, and that it forms a tenacious coating round every little hollow cell in the bread, which coating does not readily allow the gas contained in the cell to escape or the water to dry up and pass off in vapour; and a third reason is that the dry crust which forms round the bread in baking is nearly impervious to water, and, like the skin of a potato which we bake in the oven or in the hot cinders, prevents the moisture from escaping.

"The proportions of water, gluten, and starch or gum, in well-baked wheaten bread, are nearly as follows:—

Water	45
Gluten	6
Starch, sugar, and gum . . .	49
	100

Chemical Tests for Metallic Impurities in Water.—The testing of water for metallic impurities is generally limited to a search for lead; but other metals, as zinc, copper, and iron, may also, in some cases, be present, zinc being often found in waters which have been gathered on galvanized iron roofs, or stored in cisterns of the same material. The following, according to Professor Church, is a useful test for lead. This dangerous and deadly metal may be detected by the brown tint produced when some solution of sulphuretted hydrogen is added to the suspected water. into which a few drops of hydrochloric acid (spirits of salt) have been previously poured. Lead should always be thus looked for in rain-water, or very soft water which has been stored in a leaden cistern, or has passed through a leaden pipe; in the water which has been kept in a copper kettle or fountain, which has been soldered with soft lead solder instead of being brazed; and in soda-water and other aerated waters which have been charged with carbonic acid gas by artificial means.

Chemical Tests for Organic Matter in Water.—According to

Professor Church, there is a test for organic matter in water which may be used with ease by any one. If a water contain substances derived from decaying animal or vegetable matters, such as those of sewage and manure and the refuse of plants, then such water will be found to destroy the beautiful purple colour of a chemical substance called permanganate of potash. The reason for this is as follows: The decaying organic matters of the water attract oxygen strongly when it is presented in certain states or forms. Now, a solution of the above permanganate contains much oxygen, just in the right state to be so attracted and removed. By its removal from the permanganate, the composition of that substance is altered and its colour destroyed. The more organic matter in the water, the more permanganate will be decolourized. The test may be thus applied: Fill a clean white teacup with the water to be tested. Add about sixty drops, or a drachm, of weak sulphuric acid; stir with a clean slip of window glass; now pour in enough of a weak solution of permanganate of potash to render the water a rich rose colour; cover the cup with a clean glass plate. Now, if there be much organic matter in the water, the colour will go in a few minutes, and more permanganate may be added and still lose its colour. It must be recollected, in using this test, that peaty matters and iron salts, which are not necessarily unwholesome, give the same result.

Chemical Works, Emanations from.—See BRICKFIELDS, EMANATIONS FROM.

Chemicals, Manufacture of.—See HARMFUL OCCUPATIONS.

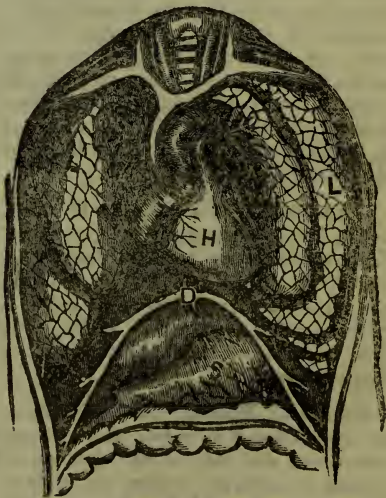
Chemists and Druggists, Duration of Life in.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Cherry.—Cherries are not very digestible; their pulpy texture and skins are not easily disposed of by the stomach; and as

the sweetest species contain a considerable excess of acid, they may be objectionable in some cases and desirable in others.

The cherry is generally richer in sugar than many other fruits which ripen in this country, often containing ten per cent. and sometimes more. One variety, the small Kentish cherry, somewhat less sweet than the morello, is especially used in preparing the liqueur cherry brandy. The morello cherry, if covered with a net to protect it from the depredations of birds, and allowed to hang till late in September or even to October, can then be used as dessert.

Chervil.—Chervil is a plant whose young leaves are much used in France for flavouring salads and soups. It is not much used, or even known, in this country. Although the roots of this plant are poisonous, its leaves are tender, and may be freely and safely used for the purposes indicated. In ancient times it is said to have been esteemed as a relishing dish, when prepared with oil, wine, and gravy.



THE CHEST AND ITS PRINCIPAL ORGANS.

Chest.—The cavity of the body known as the "chest" is situated between the neck

and the abdomen. It contains the heart and large blood-vessels, together with the lungs. "It is singular," remarks one writer, "how much ignorance there is among the uneducated regarding the situation of what is called the chest: generally it is referred to the pit of the stomach, and what is called 'a pain in the chest' is, in many instances, a pain in the former situation."

In the annexed illustration the upper part above the diaphragm D represents the chest and the principal organs that are contained therein; namely, the heart, H, and the lungs L. The stomach, S, situated below the diaphragm, is not included in the chest, as has been said.

Chest, Injuries of the.—In injuries of the chest it should first be sought to ascertain whether there be fracture of a rib by feeling with the fingers for *crepitus*, or grating of the broken bone, and by paying particular attention to the patient's breathing. If he breathe short, and complain of pain on a full inspiration at the precise part where the blow was received, if coughing or sneezing produce pain in the same spot, and particularly if coughing and spitting of blood have come on since the accident, it may, without hesitation, be pronounced that there is fracture of a rib, and in the latter case a wound of the lungs by the fractured bone.

Chestnut.—This nut is rich in starch, and contains comparatively little oil or fat. Large quantities are imported from Spain and Italy, where, as indeed is the case throughout Southern Europe generally, it ranks as an important article of food. Its meal is made into cakes, or the nuts are roasted or boiled.

Chicken Broth.—Take the yolk of an egg and beat it up in two ounces of soft water, and add this, along with a little parsley or celery, to chicken tea, made as before directed, and boiled down one-half. Rice, vermicelli, or macaroni, properly boiled, may be added with advantage.

Chicken-Pox, or Varicella.—

This disorder, to which infants and young children are chiefly liable, is sufficiently distinguished from the small-pox by its fluid, except in a few anomalous cases, being limpid throughout, and by its concreting into crust, as early as the third or fourth day from the eruption; while in small-pox the fluid becomes purulent, and does not concrete into crusts till about the ninth day, and often much later.

Chicken-Pox, Symptoms of.—

In the chicken-pox, after slight symptoms of fever, as lassitude, loss of sleep, wandering pains, loss of appetite, etc., an eruption appears; first on the back, consisting of small reddish pimples, much resembling the first appearance of small-pox. On the second day the red pimples become small vesicles, containing a colourless fluid, and sometimes a yellowish transparent liquor. On the third, the pustules arrive at their full maturity, and, in some instances, very much resemble the genuine small-pox. Soon after, the fluid escapes from the tender vesicle, and a thin scab is formed at the top of the pock, without pus ever being formed as in the true small-pox. Generally before the fifth day the whole eruption disappears, and no cicatrix or mark is left behind.

Chicken-pox is entirely free from danger, unless the eruption be of the confluent kind, that is, the pimples being numerous and running into each other, when the danger is to be appreciated from the degree of violence of the concomitant fever.

Chicken-Pox, Treatment of.—

In the ordinary course of this complaint the symptoms are so slight as not to require the aid of medicine. Gentle purges are all that are in general necessary. If the shivering, sickness, headache, and pains in the limbs are severe, an active purge should be administered, succeeded by some diluting drink; and the patient should be confined to a quiet, spacious, and well-ventilated room, with a cool dress, till the febrile symptoms have disappeared. In many cases

the child will play about as cheerfully as usual, and appear to be perfectly free from illness. Care must be taken, however, lest the child catch cold during this trifling disease, or serious lung disease may result. Chicken-pox is contagious. It is by many called the glass-pock.

Chickens.—Chickens or poultry contain more of the muscle-making and heat-producing elements than beef or veal. This is especially true of the legs of a chicken or turkey, which are far superior to the breast as a valuable food. The breast is white, dry, and somewhat insipid, while the muscles that move the legs are dark, juicy, and have a rich flavour. In birds which live on the wing it is otherwise. Their breasts are rich in muscle-making and vital elements, while the meat on the thighs and side bones is poor and dry.

Chicken Tea.—Take a small chicken, and after removing the skin and the fat between the muscles, divide it into two longitudinal halves, and after removing the lungs and everything adhering to the backbone and chest walls, cut it into as thin slices as possible. Put the slices so cut into a pan, with a sufficient quantity of salt, and then pour over it a quart of boiling water. Cover the pan, and boil with a slow fire for two hours, and, having allowed it to stand for half an hour longer on the hob, strain off the fluid through a sieve. Both beef-tea and chicken-tea can be employed during disease should animal diet be admissible, and by adding flour, or other thickening substance, may be made useful as articles of diet during convalescence.

Chicory.—Chicory, succory, or wild endive, is possessed of a root which abounds in a bitter juice, which has led to its employment as a substitute for coffee. It does not, however, possess in any degree the pleasant aroma which recommends the genuine roasted coffee. When infused, even in cold water, it imparts to it a dark colour and a sweetish-bitter taste. "To many,"

says Professor Johnston, "the addition of a little of this bitter liquid to the infusion of genuine coffee appears an improvement—a remarkable illustration of the creation of a corrupt taste by an adulteration, which taste demands afterwards the continuance of the adulteration to satisfy its own cravings. The bitter substance itself, however, is not considered unwholesome. Very many bitter substances of this kind possess a tonic property, and it is not unlikely that the bitter of chicory may be among the number.

"But the use of chicory appears to have originated from other causes than the discovery, or even the supposed presence, of a tonic property in its bitter ingredient. A little of the roasted chicory gives as dark a colour to water, and as bitter a taste, as a good deal of coffee, and hence it was originally introduced into the coffee houses for a purpose akin to that which takes *Cocculus indicus* into the premises of the fraudulent brewer. It gave colour and taste to the beverage of the drinker, and at the same time saved the expensive coffee of the seller. The public taste gradually accommodated itself to the fraudulent mixture; it became by-and-by even grateful to the accustomed palate, and finally a kind of favourite necessity to the lovers of *dark-coloured bitter coffee*. It has even injured the beverage we now obtain from genuine coffee by introducing the practice of roasting it darker, and thus lessening both its nutritive quality and its aroma."

Chilblain Liniment.—See EMBROCATIONS.

Chilblains.—The chilblain is a painful inflammatory swelling, of a florid, deep purple, or leaden colour, appearing in the fingers, toes, heels, and other extreme parts of the body. The pain is sometimes intermitting and pungent; but the patient is more frequently annoyed by an obstinate itching and sense of tingling. The part often swells, and ulceration not unfrequently follows, in which case a simple separation of the skin is first observed, and

below this there appears a foul, irregular, painful ulcer.

It is most frequently found in children and older persons of relaxed fibres, and the common exciting cause is exposure to severe degrees of cold.

Many persons subject to chilblains might prevent their occurrence, or very much lessen their severity, if upon the approach of winter they were to defend the parts from external cold. Occasional friction should also be resorted to.

Chilblains, Treatment of.—A stimulant mode of treatment is the only one cure that will answer. In the *inflamed, unbroken state* the topical application of a stimulating liniment, or lotion, is generally sufficient for a cure, if it be used daily and with perseverance, the part being defended at the same time from the severity of the external air. Sir Astley Cooper is said to have been partial to the following liniment:—

Take of camphorated spirits of wine, one ounce; Goulard's extract (pure), half an ounce. Mix and apply to the part.

Chilblains, Ulcerated, Treatment of.—When chilblains come to the *ulcerated state*, or "broken" state as it is sometimes called, warm and irritating dressing will alone succeed in effecting a cure. The following application is much esteemed: Take of honey and common turpentine, of each four ounces. Mix these together, and then stir in a sufficient quantity of the finest wheat flour, to give it the consistency of a cerate. Dress the part with it daily, twice, in the usual way.

Child, Birth of, What to do at.—See BIRTH OF CHILD, WHAT TO DO AT.

Child, Treatment of, after Birth.—The first thing to be done after the birth of a child is to sever it from the mother by the division of the cord or navel string, and to carry it away in the flannel

receiver, and place it in a position free from danger. Provided there is nothing to hinder it, so soon as the child is removed, the process of washing and dressing may be at once begun. Should the condition of the mother, however, require the services of both nurse and attendant, or should there be anything in the condition of the child to forbid it, the washing and dressing may be deferred. Where, however, there is nothing preventing, it should be proceeded with at once. The various articles of clothing which the child is to put on should have been hung upon a chair at the commencement of labour in proximity to the fire, and will now be thoroughly aired, and ready to put on as soon as the child is washed.

The child having been washed, should be carefully removed from the bath and placed on a pillow covered with warm cloths upon the nurse's knee, and dried by means of warm, soft towels. The washing and drying being now at an end, the putting up of the navel string should engage attention. For this purpose a piece of soft, old linen should be taken, and a hole cut in the centre. Through this hole the navel string should be drawn (notice being taken while doing so that there is no bleeding from the end), and the lower part folded up against the other, so as to be brought into contact with the child's abdomen. It will thus lie between the two folds of the linen.

The cord is maintained in position by means of the flannel binder, which should now be applied. This binder should be made about five inches deep, and of sufficient length to encircle the child's body once and a half. It must on no account be drawn too tight, as the action of the internal organs may be interfered with, and the liver, which in the infant is large, may be unduly pressed upon and injured. It has this further disadvantage when made very tight, that it interferes with the free action of the lungs.

Care must therefore be taken in applying the binder that it does not press injuriously upon any part, and in order to ensure this there ought always to be sufficient space left

after it is applied to permit of the finger being insinuated between it and the skin. It is better to retain it in position by means of a few stitches. If pins are used, the ordinary ones should be avoided, and safety pins employed instead. Unless great care be taken in introducing them, ordinary pins are very apt to prick the child, and rather than run any risk, they had better not be used.

Next to the flannel binder is placed a shirt, which preferably should be made of wool, as it will then afford the child both more warmth and greater protection against cold. Above this the petticoat should be placed, and then the infant's frock or slip. A shawl or piece of flannel should also be provided to throw over the infant's shoulders. The head is better kept bare.

Childhood, Exercise in.—The amount of exercise in childhood and youth should be most carefully regulated, as in many instances ambitious children will far exceed their strength in the effort to avoid being outdone by older and more robust companions. In infancy, the almost incessant movements of a baby's limbs show how imperative is the instinct of Nature for muscular exercise. A baby seems to rejoice in putting in action every muscle of its body, and often the sole cause of its uneasiness appears to be disappointment over its inability to solve, with its arms, legs and head, all at once, the problem of perpetual motion. Hence it is important not to restrict too much the freedom of infants, and care should be taken to prevent their clothing being too tight to allow ample freedom of the limbs. Even the cry of a young child is often useful as a means of exercising the muscles of the chest, and in moderation must not be discouraged. After the baby begins to walk, the amount of this kind of exercise which it is stimulated to indulge in must be guided for a year or two by the extent of ossification (or bone development) of the leg bones, otherwise these may become bent by the weight of the infant, and permanently deformed.

M. D.

"The best muscular exercise for young children," says a well-known writer, "is the movement to which they are led by their natural playfulness. They, if left to themselves, will run, tumble, and toss and wrestle with each other like sportive kittens. Each limb and every muscle of their bodies will by turns rise and fall, swell, contract, and perform all the actions of which they are capable. They are hardly at rest a moment, and each movement they make is of the freest and most graceful kind. Nothing can be more favourable for the just development of the muscular system, and, in fact, for vigorous growth and sound health, than the motions of a child in the free indulgence of its playful moods.

"Parents, however, are very apt to check the instinctive movements of their children, and thus unwisely deprive them of the natural and most effective means of graceful and healthy development. Sometimes it is a timid anxiety lest the child shall hurt itself, which causes an officious vigilance, that is always on the alert to see danger in each enterprising effort of the child, and to check the execution of any eccentric gambol, however innocent. Accidents will certainly happen to children occasionally, as to others; but that their occurrence is not at all in proportion to the estimate of anxious mothers is pretty clear, from the constant increase of the world's population of men and women.

"Overstrained notions of propriety on the part of the would-be genteel mother are also allowed often to interfere with the natural movement of the child. Augustus must turn neither to the right nor left, but hold up his head, and behave like a gentleman; and Ann Eliza must not run like a rude street-boy, but be a little lady, and walk nice and straight. With these and such-like injunctions children are often fixed into a rigid form of deportment, which is as preventive of natural movement as the village stocks, where it was customary to stick sheep-stealers, or other offenders, fast by neck and heels. Children certainly should be taught to conduct themselves in a quiet and orderly way, and even learn to walk

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straight and sit still, when occasion requires such formal decorum; but the rule for all young folks ought to be freedom."

During childhood and youth effort should be made to exercise every important muscle in the body, each in its turn, so as to secure for all a complete and symmetrical development, and consequently a robust health. To accomplish this, light gymnastics, with dumb-bells, rings, etc., for girls; and the sports of the playground, with rowing, swimming, running, leaping, and riding, for boys and young men, are vitally necessary. A desirable means of healthy exercise is to be found in providing boys and girls with a good and safe go-cart, an excellent type of which exists in the patent "Victor" carriage, manufactured and sold by Messrs. Marris & Cooke, of Grimsby.

Children, Acute Bronchitis in.
—See ACUTE BRONCHITIS IN CHILDREN.

Children, Administering of Medicine to.—See MEDICINE, ADMINISTERING OF, TO CHILDREN.

Children, Bare Feet for.—See BARE FEET FOR CHILDREN.

Children, Baths for.—See BATHS FOR CHILDREN.

Children, Diet of.—The following tables of dietary will be found useful as a guide for parents:—

1. From eighteen months to two years old.—Breakfast at 7.30 a.m. A large cup of raw milk, with a good slice of stale bread; or half a pint of hot bread and milk. Dinner should be taken about 1.30 p.m. It may consist of some good beef tea or broth, in which some bread crumbs or a well-mashed potato may be mixed. A cup of milk and water may also be given. At 6 p.m. a large cup of good milk may be given, with a slice of bread and butter. No other meal need be given, as the child, when healthy, ought to sleep all night, and it is bad to accustom it to wake in the night and cry for food. Yet, if it should do so, a

little milk and water may be given. Farinaceous food should not be given at an early age to any extent, as the stomach is overloaded by that means, and fails to digest it properly.

2. From two to three years old.—Breakfast at 7.30 a.m. A large cupful of milk, with a slice of bread and butter, and now and then the lightly boiled yolk of an egg.

At 11 o'clock a.m. a cup of milk may be given. For dinner, a large cup of beef tea or broth, or a little finely cut-up roast mutton; or three or four tablespoonfuls of gravy, in which bread crumbs or a mashed potato may be mixed. A small quantity of rice pudding, with plenty of milk, or a piece of custard pudding. At 6 p.m. some milk may be given, or a little tea with plenty of milk in it, together with some bread and butter or some toast and butter. Now and then a little stewed fruit may be given, or occasionally a little jam.

3. From three to ten years of age.—The amount of food given will vary with the age and appetite of the child. Breakfast at 7.30 a.m. A basin of bread and milk, with some thick slices of bread and butter. Occasionally a lightly boiled egg may be given. At 11 o'clock a.m. a small slice of bread and butter may be given, if required, with a little water or milk and water. Dinner at 1.30 p.m. Some lightly boiled mutton, or a slice of roast beef or mutton with plenty of gravy; bread should be eaten with it, or a mashed potato. A light pudding may be given, as rice, custard, ground rice, etc. At times a fruit pudding, well cooked, may be tried, or well-stewed fruit is beneficial. Considerable variety may be adopted at this age, provided that too much is not given, and that it is digested well. Broth or soup may be substituted once or twice a week for the meat. Boiled salt beef, pork, and veal are not so easily digested as fresh beef and mutton. Cheese is not advisable. Prunes, figs, almonds, and raisins, and such-like fruits, may be given now and then with advantage; but any excess should be avoided carefully. Biscuits, nuts, preserved foreign fruit, walnuts, and dates are less digestible.

A roasted apple, well sugared, or stewed pears are very nice, and suitable for children; and occasionally some jam, as raspberry, strawberry, or currant preserve, may be given with bread at tea-time. At 6 p.m. milk and water, or tea with plenty of milk, may be given, also bread and butter. Plain seed cake, or a slice of an ordinary home-made plum cake, may occasionally be substituted, or a sponge cake. No stimulants need be given at all at this age. There is seldom any occasion for supper; if required, a thin slice of bread and butter may be given.

4. From ten to fifteen years old.—The same diet as No. 3, only now more may be given in proportion to the age: boys, too, often require more than girls, as they undergo more active exercise. A good meat meal should be given at mid-day, but it is not required oftener. For breakfast, cocoa and milk is very nutritious, or a basin of oatmeal porridge with fresh milk may be substituted for the bread and milk. These diets pre-suppose that the child is in good health, and that active exercise is taken; but if disease be present, some modification may be required, and for this medical advice should be sought. In the treatment of children's diseases more than half the success is due to the careful arrangement of the diet.

Children, Food and Study for.

—See FOOD AND STUDY FOR CHILDREN.

Children, How to Carry.—The following advice upon the manner of carrying an infant in its nurse's arms is given by Dr. Eberle:—"The spine and its muscles seldom acquire sufficient strength and firmness before the end of the third month to enable the child to support its body in an upright position without inconvenience or risk of injury. Until this power is manifestly acquired, the infant should not be carried or suffered to sit with its body erect, without supporting it in such a manner as to lighten the pressure made on the spine, and aid it in maintaining the upright pos-

ture of its head and trunk; therefore, at first (a few days after birth), the infant should be taken from its cradle or bed two or three times daily and laid on its back upon a pillow, and carried gently about the chamber.

"After the third or fourth week the child may be carried in a reclining posture on the arms of a careful nurse, in such a manner as to afford entire support both to body and head. This may be done by reclining the infant upon the forearm, the hand embracing the upper and posterior parts of the thighs, whilst its body and head are supported by resting against the breast and arms of the nurse. When held in this way, it may be gently moved from side to side, or up and down, while it is carefully carried through a well-ventilated room. The manner in which infants and young people are handled by their nurses and by those who daily surround them is one that is productive of mischief to the child, and requires to be noticed here. Thus an infant is often rudely grasped by one or other arm and lifted from the ground, the weight of the body being meanwhile almost entirely supported by the arms, and as the joints of an infant are not so deeply excavated as those of the adult, and portions of bone are but imperfectly united to each other, the former may be very easily dislocated and the latter separated or broken."

Children, Sick, Nursing of.—

See NURSING OF SICK CHILDREN.

Children, Signs of Disease in.

—See DISEASE, SIGNS OF, IN CHILDREN.

Children, Sleep for.—Childhood, it is well known, requires a greater amount of sleep than mature age. The rule should be, for children between five and seven, about twelve hours' sleep; children above that age, ten, and never less than eight. Care should be taken that they are disturbed as little as possible. The time for going to sleep should be seven in summer and about

six o'clock in winter, and keeping strictly to this hour will not only be beneficial to the children's health, but will accustom them to a certain sense of punctuality and obedience.

Children, Warmth for.—See WARMTH FOR CHILDREN.

Child's Bedroom.—See BEDROOM, THE CHILD'S.

Child's Nursery.—See NURSERY, THE CHILD'S.

Chinese Stages of Life.—According to Sir John Bowring, the Chinese divide life into ten stages:

10 years.	Opening degree.
20 „	Youth expired.
30 „	Strength and Marriage.
40 „	Officially apt.
50 „	Error knowing.
60 „	Cycle closing.
70 „	Rare bird of age.
80 „	Rusty visage.
90 „	Delayed.
100 „	Age's Extremity.

Chives.—This plant is a native of Britain. It is a member of the alliaceous group, and its dark green tubular leaves have the flavour of the onion, but in a more delicate degree. In Scotland it forms a favourite addition to soups. When shredded small and mixed with butter, it helps to form an excellent savoury omelet; and it is useful for flavouring broth, especially mutton broth and salads, instead of the stronger-tasted onion.

Chlorinated Soda Poultice.—See POULTICES.

Chlorine (*Gr.* *chlō'ros*, grass-green).—Of all readily available disinfectants and deodorizers, that which holds the foremost rank, however, is chlorine, either in the state of free gas, or in combination with lime or soda, as chlorides (hypochlorides) of these bases. Chlorine acts not only chemi-

cally upon the gases produced, but upon the organized molecules of the miasmatic matter itself, decomposing and destroying them. Its penetrating quality enables it also to reach the poisonous gases in their most secret recesses, and diffused in an atmosphere loaded with typhoid or malarial poison it will remove all infection almost immediately.

Chlorine as a Disinfectant.—

The use of chlorine as a disinfectant, however, requires care. In the form of bleaching powder (chloride of lime), it may be sprinkled over the surfaces of damp decomposing or putrescent materials. For use in apartments it is best to mix the bleaching powder with a little water, and expose the same to the air in shallow vessels, if possible upon a high shelf. This compound is gradually decomposed by the carbonic acid of the atmosphere, and the chlorine being evolved, falls slowly down and is diffused through the room. If a more rapid action is required, a little diluted sulphuric or hydrochloric acid may be allowed to drop into the chloride of lime solution, from a vessel suspended above it, by means of a piece of lamp-wick arranged in the form of a syphon. Another method is to suspend in the apartment cloths steeped in a solution of bleaching powder.

“It should be borne in mind,” says Professor Faraday, “that chlorine in any form must only be used as an aid to proper ventilation. It is a necessary condition of health that our houses and rooms be properly ventilated. There is no substitute for ventilation any more than for washing or for general cleanliness. Chlorine, like medicine, ought in general to be used on special occasions and under advice. In a sick room, when ventilation is often difficult, chlorine, liberated in very minute quantities, will often be found singularly refreshing; but in this, as in all other cases of fumigation with chlorine, all metallic articles in the apartment ought to be removed, for these become speedily tarnished by the action of chlorine.”

Chlorosis, or Green Sickness.

—Chlorosis, or green sickness, is a complaint which occurs chiefly in girls about the age of puberty, and is characterized by a pale, blanched complexion, languor, listlessness, and depraved appetite and digestion: the several secretions being faulty or inert, especially at their commencement. It is called green-sickness, from the pale, livid and greenish cast of the skin so commonly present.

Chlorosis, Causes of.—All the symptoms indicate it to be a disease of debility. Constitutional weakness and relaxation frequently dispose to green-sickness; and whatever enervates the general habit, or the stomach in particular, such as indulgence in heated rooms and late hours, long residence in crowded cities, insufficient or innutritious diet, and constipation may be ranked among its causes.

Chlorosis, Symptoms of.—The symptoms consist chiefly in a general sense of oppression, languor, and indigestion. The languor extends over the whole system, and affects the mind as well as the body; and hence, while the appetite is feeble and capricious, and shows a desire for the most unaccountable and innutrient substances, as lime, chalk, etc., the mind is capricious and variable, often pleased with trifles, and incapable of fixing on any serious pursuit. The heat of the system is diffused irregularly, and is almost always below the point of health; there is consequently, great general inactivity, and particularly in the small vessels and extreme parts of the body. The pulse is quick, but low, the breathing attended with labour, the sleep disturbed, the face pale, the feet cold, the nostrils dry, the bowels irregularly confined, and the urine colourless. There is, also, sometimes an irritable and distressing cough; and the patient is thought to be on the verge of a decline, or perhaps to be running rapidly through its stages. A decline, however, does not follow, nor is the disease found fatal, although it should continue, as it has done not unfrequently, for some years.

Chlorosis, Treatment of.—The great object of treatment is to get the system into a state of good general health, by the use of tonics, chiefly of a chalybeate nature, alteratives, and aperients; in conjunction with horse exercise, change of air and scene, a moderate but nutritious diet, and cheerful society.

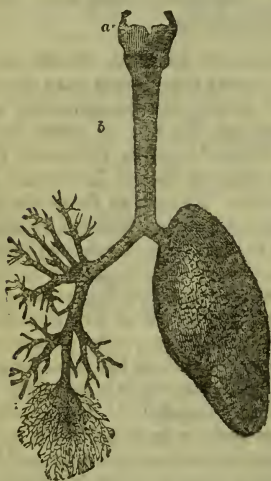
Chocolate.—The preparation so called is cocoa ground up with sugar and flavoured with *vanilla*, sometimes with bitter almonds in addition, or with cinnamon and other spices. Usually it contains some starch or flour.—See COCOA.

Choice of House.—In the choice of a house every housekeeper may assist in a general reform and improvement of the character of the city in which he lives. "The buyer," remarks Dr. James B. Russell, in Glasgow Health Lectures, "makes the market. So long as there are tenants for unhealthy houses, there will be unhealthy houses to be had. But you may justly say, 'When we go into the market to buy our food, we are protected by the laws of our country from the risk of buying adulterated or injurious articles; why should we not also be protected from the more serious risk of having a house which is not of the nature or quality demanded?' I can only reply that you ought to be so protected, and that you have only to say it must be, and it shall be. Every house ought to be inspected and tested, and certified to be, in its general structure and arrangements, habitable, before it can be offered for habitation. As things are, the introduction of inhabitants is the test applied. Moreover, just as ships are re-surveyed and re-classed at Lloyd's, houses should from time to time be tested. Until this is done, you may with advantage consult the record of a Pathological Register, kept at the sanitary office, in which all deaths from infectious diseases are entered opposite the streets and numbers of the streets in which they occurred.

Choice of Site for House.—
See SITE FOR HOUSE, CHOICE OF.

Choking.—The term choking is applied to the accident of something sticking in the throat, whether it be a body too large to pass readily into the stomach, and being therefore detained in some part of the oesophagus or gullet, in the act of swallowing, or whether it be something which has accidentally passed from the mouth into the trachea or windpipe.

This is an accident liable to happen to hungry persons eating hastily, or to children, and requires the greatest self-control and presence of mind on the part of those



THE WINDPIPE DIVIDING INTO BRONCHIAL TUBES.

who are present, in order to be of any use. The substance which causes the choking may either be at the top of the throat, at the entrance to the gullet, or lower down. If at the upper part of the throat, prompt action will often remove it, either by thrusting the finger and thumb into the mouth and pulling the obstruction away, or, if it cannot be reached so as to pull it away, a piece of whalebone, a quill, or even a penholder—anything at hand—should be seized and pushed down as a probang, so to force the substance down the gullet. Tickling

the back of the mouth with a feather, so as to produce sudden retching, will sometimes dislodge it; a sharp blow on the back will perhaps displace it, or a sudden splashing of cold water in the face, causing involuntary gasping. Should the patient become insensible before relief can be afforded, it must not be assumed for certain that death has taken place, and such remedies as dashing cold water in the face and on the chest, applying ammonia to the nostrils, and inflating the lungs by bellows, etc., should be continued till medical aid arrives.

When any foreign substance, solid or fluid, be it ever so small, as, for example, a crumb of bread or a drop of water, passes into the windpipe, it immediately occasions distressing cough, and interrupted respiration from spasm of the muscles at the top of the windpipe, and this, as we observed before, is also called choking, but is altogether a different kind of accident from the one we have just been considering. The substance here is always small, and is usually a dry crumb of bread, or a drop of fluid, drawn accidentally into the windpipe in the act of inspiration, which frequently occurs from an incautious attempt at speaking whilst in the act of swallowing. Quietude on the part of the sufferer, and to refrain wholly from speaking, is all that can be recommended. It may be doubted whether the common practice of taking a little drink really does any good, but as it is unattended by any evil, it may be resorted to. When you reflect that the offending matter is in the windpipe, and that the drink goes down the gullet, it is perfectly clear that it cannot be washed down, as is commonly believed; still, however, it is possible that the act of swallowing the drink may, by suspending for the time the action of breathing, allow the muscles of respiration to recover more readily from the state of spasm, into which they have been thrown by the irritation from the offending matter. With this view, therefore, the drink should be swallowed as slowly as possible, and with the same view a voluntary suspension of breathing, as long as can be done under these circumstances,

tends to lessen and shorten the state of distress. Nature, however, generally removes the offending cause by the efforts of the cough which is invariably produced.

Paralytic patients are very liable to this species of choking, and sometimes a large piece of food has been known to slip into the windpipe of such a person, and produce imminent danger of suffocation. In such an extreme case a surgeon, if at hand, would be justified in performing the operation of cutting an opening into the windpipe.

Cholera from Pump Water.—

The famous tea-water pump in Broad Street, near Golden Square, London, is believed to have been the means of killing five hundred persons with cholera, in a single week, during the epidemic of 1854, and its agency in disseminating this fearful scourge was detected in the following curious way: It has long been known that water which contains five or six grains of lime, or magnesia, to the gallon, is much the best for making tea, because this amount of the mineral ingredients mentioned prevents the solution of certain astringent principles of the leaf. Thus, the Broad Street pump became known, and highly appreciated, because it furnished water impregnated with exactly the right quantity of lime to make "the cup which cheers, but does not inebriate," in its full perfection: and when the cholera broke out in its neighbourhood, people, who removed to other quarters of London, continued to send to this pump to procure their tea-water. One old lady in particular, who took refuge in the distant suburb of Hampstead, sent her maid-servant every day three miles for a kettle of water, to the Broad Street pump, and this old lady and her maid were the only persons attacked with cholera in Hampstead. The attention of health officers was finally attracted to the pump as a disseminator of disease, and after taking away the pump-handle the pestilence notably decreased in the neighbourhood. The water of this pump well was afterwards proved to have become contaminated by the soakage into it of discharges from the bowels of cholera

patients using cesspits in its vicinity, such discharges being now known to form the chief agents in propagating this terrible disease.

Cholera, How to Escape.—"The premonitory symptom of an attack of cholera," to quote an American writer, "is looseness of the bowels. Hence, when cholera is epidemic in a district, every one should watch carefully the action of his bowels; and whenever they are moved over once in twenty-four hours, recourse should be had to the proper remedies for checking diarrhoea. The body should be kept quiet; all drinks should be avoided; and the food should consist principally of common rice, parched brown, and then boiled and eaten with salt and butter.

"A light compress should be bound around the abdomen; and the best material for a bandage for this purpose is a strip of stout flannel, about a foot broad, and sufficiently long to double in front, but to be of but one thickness behind. Tape-strings should be attached to the outer end, and also to another part of the piece, a few inches beyond the lapping-point, so as to make the flannel conveniently tight, and also aid in keeping it in place. When the cholera was prevailing in Europe, and broke out so suddenly among the Prussian soldiers that it was impossible to procure medical attendance for any considerable number, an order was issued that every soldier, sick or well, should instantly wear a flannel bandage around the stomach; and the disease disappeared in a few days."

Cholera Infantum.—See CHOLERA MORBUS.

Cholera Morbus, or British Cholera (*Gr.* chol'ér, bile; *Lat.* morbus, diseased).—Cholera morbus is an affection of the stomach and bowels common in hot weather, and rarely seen in this climate at other seasons. In many respects it resembles true or Asiatic cholera, and the more severe cases can only be distinguished

from that pestilence by the disease not occurring in an epidemic form. At the outbreak of an epidemic of cholera, these two affections are not distinguishable, and, in fact, they have much in common, the chief points of difference being connected with difference of causation and the far milder course of cholera morbus.

This disease is, therefore, sometimes called European, or British, cholera, and from its appearing in isolated cases, sporadic ("scattered," from Gr. *spei'-ro*, "I sow") cholera.

Cholera Morbus, Causes of.—

British cholera is caused by the use of indigestible food, stale meats or fish, impure drinking-water, etc.

Cholera Morbus, Symptoms of.

—At the commencement of an attack there is vomiting and purging of liquid matter, and bile in quantities. Violent pains in the stomach, cramps of the legs and muscles of the abdomen, coldness, faintness, and a tendency to collapse. The attack comes on suddenly, and a physician should be sent for at once, especially if the patient is an old or feeble person. In rare cases the affection pursues an unfavourable course to a fatal ending. The vomiting and purging go on uncontrolled. The pulse grows feeble, the face becomes pinched, the surface cold and shrivelled, and death takes place in a few hours.

This affection presents, in most cases, the symptoms of very great disturbances of the nervous system, and frequently occurs in those who are exhausted from over-exertion, worry, or anxiety. It spares no age, but attacks with diminishing frequency the old, and less often women than men. It is extremely common and frightfully fatal in infancy, and constitutes the disease called Cholera Infantum.

Cholera Morbus, Treatment of.

—In British cholera the question to be decided is usually this: have the vomiting and purging lasted long enough to expel the offending matters? If so, they had better

be stopped; if not, something should be given to favour their expulsion. Rhubarb and gray powder are perhaps the best things to be given, if laxative medicine is necessary; if not, a few drops (ten or so) of laudanum or sulphuric acid, or five grains of Dover's powder, or ten or fifteen grains of compound chalk and opium powder, will be best to stop the purging.

Do not at first try to check the vomiting and purging: nature is in this way trying to get rid of an irritant; but should the skin be cold and the pulse feeble, give a tablespoonful of brandy in a wine-glass of hot water. To relieve the pain, put a mustard poultice over the bowels, mixing it with *hot* water; or wring out a flannel in hot water, sprinkle it with oil of turpentine, and apply. The turpentine will blister as soon as mustard, and must be watched. Rub the legs vigorously if there is cramp, and keep the patient in bed, with hot bottles at the feet should they be cold. The attack is very seldom fatal, but is prostrating, and light but nourishing food will be necessary after it; milk and rice gruel, strong broth, beef-tea, and eggs, if allowed, etc. The return to solid food must be gradual. Should the bowels not move readily, an enema of warm water and olive oil will probably be ordered. Ice or an effervescent drink will be best to allay sickness, should these be required. The disease may prove fatal to children, but rarely to adults.

Chorea (*Gr. chor'ea*, dance).—This is a disease generally met with in children, but occasionally it occurs in adult life. The disorder is often dependent on a fright, the disease appearing in the course of two or three days after by twitchings of the arm and leg and the muscles of the face; generally one side is more affected than the other, and sometimes the choreic twitchings are confined to one side. The twitchings of the muscles are worse when any one is observing them, or when the child is excited; they always cease during sleep.

Chorea, Symptoms of.—Whoever has once witnessed the strange gesticulations

and involuntary motion of a person labouring under chorea, or St. Vitus's dance, can never afterwards be at a loss to recognise the disease. The patient is usually a boy or a girl, of from five to fifteen years of age. The disease comes on gradually; it shows itself at first by occasional jerks or involuntary motions of an arm or of a leg, and by occasional slight distortions of the muscles of the face. In a few days or weeks it is observed that the child walks unsteadily, that his gait is awkward, that, in advancing, one leg almost crosses the other, and that one or both arms are at the same time tossed about irregularly and involuntarily. In a majority of cases these irregular muscular contractions occur only in the limbs of one side, or at least most prominently on one side of the body; and the distortions of the face are either confined to, or are most remarkable on, the same side. As the disease advances, the little patient has considerable difficulty in feeding himself, for, in lifting anything from the table and raising it to his mouth, the action is irregular, and the motion consequently not in a straight line; the spoon or fork misses the mouth, or the fluid from the cup is spilt, and it is not till after many vain attempts that the object is at last attained. These involuntary actions, however, may, in some cases, be arrested for a short time by fixing the patient's attention on some interesting object, and they usually cease altogether during sleep. From the commencement of the complaint the general health is impaired, and as it advances, the patient grows pale and thin; the appetite is precarious, or altogether fails; the temper becomes fretful, the usual animation disappears, and the child becomes indifferent to its customary sports. Should the proper medical treatment not be adopted, worse consequences may sooner or later ensue, for patients thus neglected are sometimes seized with paralysis or epilepsy, and at other times they sink gradually into a state of idiocy.

In most cases the appetite is not affected, nor does the general health seem much impaired; there is, as a rule, no fever, and

generally a recovery may be looked for; in a few others, which are of somewhat rare occurrence, the twitchings are so violent that the elbows, knees, and hands become sore and abraded by constantly striking surrounding objects; there may be fever, delirium, and sleeplessness; these are signs of grave importance, and are usually associated with heart disease, or follow on an attack of rheumatic fever.

Chorea, Treatment of.—Chorea is a very curable disease in ordinary cases. Early treatment is always advisable, and it should consist in taking a cold bath every morning, to be followed by friction with a rough towel; tonics are of great service, and more especially those containing iron. A simple but nourishing diet should be given, and a certain amount taken daily of outdoor exercise. For those cases in which fever and delirium are present, rest in bed, sedatives to allay the sleeplessness, and a fever diet are desirable.

Choroid.—*See* IRIS.

Chronic Bronchitis.—*See* BRONCHITIS, CHRONIC.

Chronic Bronchitis, Mixture for.—*See* MIXTURES.

Chronic Laryngitis.—*See* LARYNGITIS, CHRONIC.

Chronic Rheumatism (*Gr.* *chron'ikos*, from *chron'os*, time; *rheu'ma*, watery discharge).—Chronic rheumatism is quite a different affection from acute rheumatism, or rheumatic fever, since acute rheumatism may pass into the chronic stage; but most frequently the one is quite independent of the other. Most old people, especially if they have led a life of exposure and fatigue, are more or less affected with rheumatism, sometimes so far as to completely cripple them. The constitutional disturbance is slight, but the pain is sometimes great, both night and day, so as to wear out the patient by continual harassing. Some cases of this

form of rheumatism do not suit well with heat, the pain being worse at night in bed; but most of these cases are better for heat, and friction especially. If the patient has any syphilitic taint, as is sometimes the case in the worst instances, the pain at night may be terribly harassing.

Some special forms of chronic rheumatism have acquired distinctive names. Thus there is a chronic affection of the loins we call lumbago (which see). This is almost always aggravated by movements. Stiff-neck, such as occurs after exposure to a cold draught of air, is another sample of chronic or sub-acute rheumatism, attacking a special part. Myalgia is the name given to pain in the muscles not due to rheumatism, and to be distinguished therefrom. Myalgia is not unfrequently found localized in the side, and there a kind of rheumatic pain is also ordinarily located. It is of importance to distinguish the one from the other, as the treatment of the two is different.

Chronic Rheumatism, Treatment of.—Chronic rheumatism must not be treated by rote; each case must be dealt with on its own merits. We must try to improve the general health, and to procure the patient sound rest by sedatives if necessary. Multitudes of remedies have been tried, and some do better than others if the cases are properly selected. In most of them iodide of potassium, with bark and cod-liver oil, are the most important remedies. The sulphur waters of Harrogate and Aix are good in many cases. Hot alkaline baths are, however, as a rule, preferable. Iodine paint to the affected joints sometimes does good, but not so much as hot alkaline lotions. Sulphur does good to many. All should wear flannel, and be careful in their diet. Beer, porter, and full-bodied wines should be prohibited.

Chronic Sore Throat.—See SORE THROAT, CHRONIC.

Cicatrix (*Lat.* cicatrix, scar).—A wound or sore invariably leaves, after heal-

ing, a distinct mark upon the skin. This mark is called a cicatrix, or scar. It is of a pale pink or white colour, is made up of firm gristly material, and is covered by a transparent, smooth, and shining layer of cuticle. The appearances of cicatrices vary immensely, according to the part of the body on which they are seated, and the nature and depth of the wound or ulcer from which they have been developed. The scars from burns, from scrofulous sores, and from malignant or lupoid ulcerations, have each their special character. After a sore has healed, the resulting cicatrix loses its ruddy or pink colour, and becomes whiter; as it gets older it glides more freely over the tissues beneath, and at the same time becomes smaller in superficial extent, drawing upon the neighbouring soft parts, so as to produce, in some instances, much distortion and deformity. Scars frequently become diseased. They are sometimes the seat of severe pain, which is more intense in damp, cold weather. Obstinate ulceration and cancer are frequently met with in the seats of old wounds.

Cider.—Cider is considered a wholesome liquor when it is properly fermented and drunk in small quantities. It is not so nutritious as ale or beer, but it is a very agreeable and mildly stimulating drink in hot weather, its acids assisting materially in quenching thirst. If taken habitually, the acidity of cider renders it injurious to the teeth.

Cider varies greatly in flavour, in acidity, in strength, and consequently in quality. The kind of apples, the degree of ripeness which they are allowed to attain, the time given them to mellow or ferment before crushing, the skill with which the different varieties are mixed before being put into the mill, the climate, the soil, the mode in which the trees are managed—all these circumstances affect the quality of the expressed juice, and then the after-treatment of the juice may introduce countless new shades of difference among the several ripe ciders produced from the same juice.

Cider is distinguished by the facility with

which it becomes sour or seems to acidify. From this arises the frequency of hard cider, the difficulty of transporting it from place to place, and the disappointments which attend efforts to keep it sound for any length of time.

Ciliary Muscle.—See IRIS.

Cinnamon.—The cinnamon-tree (*Laurus Cinnamomum*) is a valuable and beautiful species of the laurel family, and grows to the height of twenty or thirty feet. The inner bark of the tree forms the cinnamon of commerce. Ceylon was thought to be its



CINNAMON-TREE.
(*Cinnamomum Ceylanicum*.)

native haunt; but it has been found in Malabar, Cochin China, Sumatra, and the Eastern Islands; also in the Brazils, the Mauritius, Jamaica, and other tropical localities. Cinnamon has an agreeable odour and pleasant taste, and is extensively employed as an addition to various articles of food. It is a stimulant, and when taken assists in the digestion of the various kinds of food to which it is added. Cinnamon is adulterated with cassia, and this in its turn

is also adulterated with sugar and wheat-flour and arrowroot.

Circulation of the Blood.—See BLOOD, CIRCULATION OF THE.

Circulatory Apparatus.—See BLOOD, CIRCULATION OF THE.

Cirrhosis of the Liver.—See LIVER, CIRRHOSIS OF THE.

Cisterns.—See STORAGE OF WATER.

Cisterns, Cleaning of.—The best cisterns for water are those that are made of slate and galvanized iron. Zinc cisterns, or wooden cisterns lined with zinc, are next to useless, as the metal is soon perforated in parts by the action of hard water containing much chalk or lime. Lead cisterns are durable, and this is the best that can be said of them.

In cleaning lead cisterns great care should be taken. The case is on record of a lady who instructed her coachman to clean out the cistern of the house. He, wishing to make a good job of it, got a bath-brick and a hard scrubbing-brush, and got into the cistern, boots and all, and brushed away till he could almost see his face reflected from the lead. The water, which was then introduced, came in contact with the bright lead, and immediately began to dissolve away the metal and acquired poisonous properties.

Lead should always retain its natural skin; and if you will clean out your cistern properly, use the softest hearth-brush you can get. Let the water flow away, and move about this soft brush so as to stir up the sediment; then lift up the waste-pipe, and let the whole of the remaining water go.

Water is also liable to be contaminated when put into pails which are not properly cleaned. No doubt in many small houses we can only hope to have the water supplied in pails, but we fear it is a very common thing for washing-water and slops to be taken out in the pails, after which they get a little rinse out, and then pure water is

poured into the same pails, and taken into the house.

Citric Acid.—This acid and its salts, the citrates, are very abundant in the fruits of some plants of the orange tribe, especially the lemon. The crystallized citric acid of commerce is obtained from this fruit on a large scale. Citric acid is an acid of agreeable taste and quite wholesome, even when taken in considerable quantities. In many unripe English fruits—gooseberries, for example—citric acid is found in the free state.

Classification of Diseases.—

Every disease has its own particular name, and as our knowledge increases year by year, fresh names are added to signify either new complaints or fresh groups of symptoms. It is obvious that some diseases are more closely allied than others; thus all those disorders which are accompanied by a high temperature are called fevers; these again are divided into those which are catching and those which are not. Some diseases are caused by the presence of parasites, others by accident or design. To arrange diseases according to any precise plan is, however, extremely difficult; if we knew accurately the causes of every disease, some scientific arrangement might be carried out; but our knowledge on this point is yet very imperfect. Then, again, there are many "causes of death" registered which are not diseases at all, but symptoms. Convulsions and diarrhoea, debility and wasting, are examples of this kind; the true cause of death is really the cause of these symptoms, if in all cases it could be ascertained. The Registrar-General has adopted a nomenclature, which has been long in use, and is well adapted for its purpose; he divides all diseases into five great classes, and these in their turn are divided into orders, while under each order are placed the diseases as known by their general name (see table on opposite page).

Classification of Foods.—In order to get an idea of the various kinds of food,

and the purposes they supply in the system, some kind of classification must be pursued. The table in the following page is supplied in order to give a general view of foods and their principal action:—

CLASSIFICATION OF FOOD.

Class I.—Alimentary or Necessary Food.

Group 1. Mineral.

Examples: water, salt, saline constituents of plants and animals.

Group 2. Carboniferous, respiratory, heat and force-giving.

Examples: starches, sugars, fats and acids.

Group 3. Nitrogenous, nutritious or flesh-forming; proteids.

Examples: albuminous compounds, fibrine of meat, casein of milk.

Class II.—Accessory Food.

Examples: cellulose, gum, gelatine.

Class III.—Medicinal or Auxiliary Food.

Group 1. Stimulants.

Examples: alcohol, volatile oils.

Group 2. Neurotics.

Examples: tea, coffee, tobacco, opium.

Clavicle (*Lat. cla'vis*, key, because the shape of the bone resembles an ancient key).

—The clavicle, or collar bone, extends from the upper part of the breast bone to the point of the shoulder. This bone is very



CLAVICLE.

liable to fracture from falls on the shoulder. Its chief use is to prevent the arms from falling forward in front of the body; and hence it is wanting in the lower animals, whose superior extremities are much closer to each other than those of man.

Clean House.—See HOUSE, HOW TO KEEP HEALTHY.

CLASSES.

ORDERS.

I. Zymotic diseases.

1. Miasmatic diseases. . . Small-pox, measles, scarlet fever, diphtheria, quinsy, croup, whooping-cough, continued fever (comprising typhus, typhoid, and simple continued fever), erysipelas, puerperal fever, carbuncle, influenza, dysentery, diarrhoea, cholera, ague, remittent fever, rheumatism, and other zymotic diseases.
2. Enthetic diseases . . . Syphilis, stricture of urethra, hydrophobia, glanders.
3. Dietic diseases . . . Privation, want of breast-milk, purpura, scurvy, alcoholism.
4. Parasitic diseases . . . Thrush, worms, parasites, etc.

II. Constitutional diseases.

1. Diathetic diseases . . . Gout, dropsy, cancer, cancrum oris, mortification.
2. Tubercular diseases . . Scrofula, consumption, hydrocephalus.

III. Local diseases.

1. Diseases of nervous system Apoplexy, paralysis, chorea, epilepsy, convulsions, brain diseases, etc.
2. „ organs of circulation Pericarditis, aneurism, heart disease, etc.
3. „ „ respiration Bronchitis, pleurisy, pneumonia, asthma, etc.
4. „ „ digestion . Gastritis, peritonitis, ascites, hernia, intussusception of intestines, etc., jaundice, diseases of stomach, liver, and spleen.
5. „ urinary organs . . Nephritis, Bright's disease, cystitis, kidney disease, etc.
6. „ organs of generation Ovarian and uterine diseases, etc.
7. „ „ locomotion Synovitis, arthritis, and diseases of the joints, etc.
8. „ integumentary system Phlegmon, ulcer, diseases of skin, etc.

IV. Developmental diseases.

1. Diseases of children . . Premature birth, cyanosis, malformation, spina bifida, etc.
2. „ adults . . Child-birth.
3. „ old people . Old age.
4. „ nutrition . Atrophy and debility.

V. Violent deaths.

1. Accident or negligence . Fractures, contusions, gun-shot wounds, cuts, stabs, burns and scalds, poison, drowning and suffocation, etc., by accident or negligence.
2. Homicide . . . Murder and manslaughter (Homicide).
3. Suicide . . . Suicide by any method.
4. Execution . . . Hanging (Execution).

Cleanliness and Dirt.—"Cleanliness," remarks Addison, "may be defined to be the emblem of purity of mind, and may be recommended under the three following heads: as it is a mark of politeness, as it produces affection, and as it bears analogy to chastity of sentiment. *First*, it is a mark of politeness, for it is universally agreed upon that no one unadorned with this virtue can go into company without giving a manifold offence. The different nations of the world are as much distinguished by their cleanliness as by their arts and sciences; the more they are advanced in civilization, the more they consult this part of politeness. *Secondly*, cleanliness may be said to be the foster-mother of affection. Beauty generally produces love, but cleanliness preserves it. Age itself is not unamiable while it is preserved clean and unsullied; like a piece of metal constantly kept smooth and bright, we look on it with more pleasure than on a new vessel cankered with rust. I might further observe, that as cleanliness renders us agreeable to others, it makes us easy to ourselves; that it is an excellent preservative of health, and that several vices both of mind and body are inconsistent with the habit of it. In the *third* place, it bears a great analogy with chastity of sentiment, and naturally inspires refined feelings and passions. We find from experience that, through the prevalence of custom, the most vicious actions lose their horror by being made familiar to us, while, on the contrary, those who live in the neighbourhood of good examples fly from the first appearance of what is shocking; and thus pure and unsullied thoughts are naturally suggested to the mind by those objects that perpetually encompass us, when they are beautiful and elegant in their kind."

In favour of dirt, however, there is something to be said, and Mr. Galton, in his "Art of Travel," has pointed out how in some circumstances washing oneself has its inconveniences. "There is no denying the fact," says Mr. Galton, "though it be not agreeable to confess it, that dirt and grease are great protectors of the skin against in-

clement weather, and that, therefore, the leader of a party should not be too exacting about the appearance of his less warmly clad followers. Daily washing, if not followed by oiling, must be compensated by wearing clothes. Take the instance of a dog. He will sleep out under any bush, and thrive there, so long as he is not washed, groomed, and kept clean; but if he be, he must have a kennel to lie in. The same is the case with a horse; he catches cold if he is groomed in the day and turned out at night; but he never catches cold if left wholly to himself. A savage will never wash unless he can grease himself afterwards—grease takes the place of clothing to him. There must be a balance between the activity of the skin and the calls upon it; and where the exposure is greater, there must the pores be well defended. In Europe we pass our lives in a strangely artificial state; our whole body swathed in many folds of dress, excepting the hands and face, the first of which are frequently gloved. We can afford to wash, but naked men cannot."

Cleanliness as a Religious Observance.—If we firmly believe it is morally our duty to take the best possible care of the bodies with which we have been entrusted, the old saying that "cleanliness is akin to godliness" finds no higher expression than in the proper use of baths.

The employment of baths goes back to the highest antiquity, and was indulged in almost to excess by the Greeks and Romans. So important are baths in warm countries that the Jewish and Oriental religions enjoin frequent ablutions as a necessary part of the ceremonies of their creeds, these no doubt largely contributing to the health and well-being of their devout disciples.

In the earlier and ruder states of society especially there is a strong tendency to endeavour to invest the spiritualities of religion with what we may call a visible and substantial form, so that they may be apprehended not only by the reason but also by the senses. Of this disposition the master minds who have founded and reared the

various systems of superstition which have held sway in different countries and ages of the world, have usually taken advantage as a chief instrument whereby to work upon the gross natures to which they had to address themselves, and to entwine the desired belief at once with their affections and with their habits. Among such outward types none can be conceived more natural or appropriate than that of washing the body with water as a sign, or attempted representation, of mental purity. The custom, particularly in the warm climates where it was first introduced, had also the further advantage of being highly conducive to health; and this circumstance no doubt contributed powerfully to recommend it to the authors of many of the religions by which it was sanctioned and enjoined.

Ablutions, or lustrations, as they are more commonly called, even constituted, as we have mentioned above, a part of the Mosaic ceremonial, and were practised among the Jews on various occasions both by the priests and by the people. They occupy an important place in the Brahminical and other religions of India, where the waters of the Ganges are considered as having so purifying a power that, even if a votary, who cannot go to that river, shall call upon it to cleanse him, in prayer, while bathing in another stream, he will be freed from any sin or pollution he may have contracted.

But the religion by which ablutions have been enjoined most punctiliously, and in the greatest number, is the Mohammedan. According to the precepts of the most rigid doctors of that faith, it may almost be said that scarcely the most ordinary or trifling action can be rightly performed without being either preceded or followed by an entire or partial lustration. The rules laid down upon the subject by those writers are minute and tedious to a degree scarcely to be believed.

The simple ceremony of the Christian baptism may be regarded as an adoption of this natural type by the Author of our faith. Although, however, that is the only instance

in which dipping in, or sprinkling with, water has been enjoined under the dispensation of the New Testament, the early Christians appear to have been also in the habit of undergoing ablution with water before partaking of the Communion. The sprinkling with holy water, in use in the Roman Catholic Church, may be considered as a species of ablution.

Cleanliness for Infants.—The utmost attention to cleanliness cannot be too strongly urged upon those who have the care of children entrusted to them. For the first few weeks the infant should be bathed morning and evening in tepid water and afterwards in cold. It is a foolish notion to plunge the newly born infant into cold water under the idea that by so doing it will be hardened and made able to resist a greater amount of cold. This practice must never be had recourse to. Let the baths during the first few weeks be tepid, then gradually lower the temperature till the water is cold. The evening bath, so long as it is continued, should be tepid.

Cleanliness is of even more importance to the child than to the mother. To keep a new-born child and its surroundings clean requires the active and constant attention of the nurse, or if the mother cannot afford to hire a nurse, after the first nine days, of the mother, who may be instructed by the nurse as to the necessary duties. Cleanliness has reference not only to the child's person and clothing, but to the bedclothes, the utensils used, and the air of the room.

As to the child's person, a daily bath should be given, after which the child may be allowed to kick awhile upon its bed, undressed, if the room be of the proper temperature. The diapers, or napkins, as soon as soiled, either by the water or the contents of the intestines, must be taken off, the soiled cuticle bathed in lukewarm water, and fresh diapers properly adjusted. A diaper once wet must not be used again without washing.

The eyes are to be washed at each dressing, and the mouth washed out after each

nursing, in tepid water. Unless this care is taken, the child is liable to an attack of what is called thrush.

Cleanliness Imperative on Workmen. — Occasionally painters, plumbers, and other workers in lead, suffer from lead poisoning, and paper-hangers, etc., from arsenical poisoning, in consequence of their eating bread and other articles of food with fingers which have not been properly cleaned from metallic particles adhering to them. The Mosaic injunction against "eating with unwashed hands" would, if universally carried out, obviate this danger; and, indeed, many of the edicts of the ancient Hebrew lawgiver have a scientific sanitary basis, which, considering the epoch when they were issued, nearly four thousand years ago, seems to point unmistakably to their origin in a wisdom from on high.

Cleanliness in Sick Rooms. — Without scrupulous attention to cleanliness in the sick room all that has been accomplished by ventilation will prove useless; for what amount of air must be hourly passing in at the windows to compensate for the accumulation of dirt and filth in a room? To ensure cleanliness, there must be order; everything should have a place of its own, and, unless in use, should be kept in it. Unused articles of food and soups of every kind should be removed from the sick-room.

Bedding. — In regard to bedding, the utmost cleanliness must be observed, and in order to render this easier, the iron bedstead and light hair mattress already mentioned will be found superior to anything else that can be made use of.

Carpets. — The sick room in which there is no carpet is likely to be the cleanest, being free from those organic impurities which store themselves up in its substance; but, unfortunately, in most private houses the sick-room is carpeted, and we have to consider how the process of sweeping can be best accomplished, so that as little of

the impurities retained in it shall reach the patient as possible. This can be best done by sweeping with a soft hair broom, taking care to move the dust gently before it, and not raise it in clouds about the patient; but the only way in which a carpet can be really "cleaned" is to take it up every quarter or half-year. Should the floor of the sick room be uncarpeted, it can be done over with sponges, wrung out of hot water, and dried by means of the floor-brushes. Damp cloths may be used instead of sponges. By this means the sick-room can be kept clean.

Furniture. — The articles of furniture should also be dusted by means of damp cloths, otherwise the dust is only dispersed throughout the room, to fall again shortly on the patient and articles of furniture alike. The floor of the sick-room may be washed if the patient is able to be removed to another room. This must not be done on a damp day as the room should be perfectly dry, and free from all traces of damp on the patient again coming into it.

Walls and Wall-Papers. — The walls best suited to the sick-room are those which have been painted or those which have been whitewashed with lime. Papers on the walls act as dust-traps; and, unless they are removed, and the walls scraped from time to time, they are apt to act injuriously on the sick. There are many papers which, besides acting injuriously by retaining dust and germs of disease, are themselves sources of poison to human beings. Such are the papers which owe their colour to arsenic. If we consider how much of this poison may be inhaled during twenty-four hours by those who inhabit rooms the papers on whose walls owe their colour to arsenical preparations, we shall not be greatly astonished at the results we sometimes see.

Cleanliness, Personal, in Sick Rooms. — Among the poorer classes especially, the want of regard for personal cleanliness in the sick is often witnessed to a lamentable extent; but it does not con-

fine itself to those alone. There is great dread in the minds of many that the changing of the bed linen in disease will prove hurtful to the patient. This, it need hardly be remarked, is altogether unfounded, and if properly done, the changing will always have a beneficial influence upon them.

It is important in the time of disease, as in health, to have the hands and face washed daily, and to have the hair carefully combed out, so as to allow free circulation of the air about the roots, and by so doing keep the scalp cool. If this is neglected, the hair, especially the long hair of the female, will become matted from the retention of perspiration, and may require to be cut, if attention is not paid to it in time. Nor must the body be neglected. It should be frequently washed. A sponge or piece of flannel and tepid water should be used, and care must be taken to expose only a small surface at a time, which ought to be rapidly dried with a heated towel or piece of flannel. In the process of drying, much good will result from rubbing the part well. In acute diseases it is well to change the body linen every day; it greatly adds to the patient's comfort.

To ensure personal cleanliness on the part of the nurse, a bath once a day is essential. It is a good plan for a nurse to take a cold sponge-bath in the morning, and to wash thoroughly with warm water at night. A nurse should always have clean hands, especial care being taken to cleanse them thoroughly with a disinfectant solution, after dressing any wound.

Cleanse Filter, To.—*See* FILTER, TO CLEANSE.

Cleansing Clothes.—Cleansing of a garment, apart from its being a decorous concession to propriety, has the effect of keeping the interstices of the material of which it may be made free for the admission of air, so essential to the protection of the warmth of the body. The flocculent texture of woollen cloth especially, if not often

stirred by shaking and beating, will become so matted together by the constant pressure of use, as to lose its peculiar adaptation to this purpose. The thickest winter coat, however warm when new and clean, may thus become, when old and allowed to get dirty from neglect, not only an unseemly but a very cold garment.

Cleansing the Teeth.—*See* HYGIENE OF THE MOUTH.

Cleansings.—For about three weeks after delivery the lying-in woman has a discharge from the interior of the womb. This discharge, as it at first issues from the external parts, consists almost entirely of pure blood, and in quantity it is sufficient to soil about twelve napkins during the first twenty-four hours. The quantity gradually diminishes till about the fifth day, when it is only sufficient in amount to soil two. From being of a red colour, as at first, the discharge gradually grows paler, until it assumes a green colour, when it receives the name of the "green waters."

When this stage is reached, the discharge has a disagreeable sickly odour. From being green in colour it comes to have the appearance of soiled water, which character it maintains throughout. As already stated, the duration of the discharge is generally about three weeks, but there are cases in which it continues a much shorter time without giving rise to any evil consequences. Especially is this the case in women who have been delivered of dead children, in some of whom it ceases after a few days without the woman suffering in the slightest degree. If, however, the discharge has been of ordinary amount, and suddenly ceases, this circumstance must not be regarded slightly, nor passed over as too trivial for notice.

It should be at once attended to, as it may be indicative of a serious febrile condition setting in upon the woman. Should it therefore be found, on the cessation of the discharge, that the patient begins to exhibit symptoms of feverishness, increase of pulse,

and general restlessness, the medical attendant should be at once communicated with, when proper means will be employed to again establish the discharge.

While the *lochia* discharge, as the cleansings are also called, continues, the most scrupulous attention should be paid to cleanliness. The external parts should be bathed every five or six hours with tepid water, a soft sponge being used for the purpose. Attention to this cannot be too strongly insisted upon. Cleanliness now is absolutely necessary to ensure a safe recovery, and those who neglect it cause a patient to run a very serious risk. It might indeed seem almost superfluous to insist on this, were it not a matter of every-day experience that there is nothing in regard to which people are more negligent, and amongst the poor, where the greatest necessity for cleanliness exists, least attention is paid to it. There are many who are deterred from performing these daily ablutions under the impression that the patient will suffer from the exposure. There need, however, be no scruple in the mind of any in regard to this, inasmuch as no exposure is necessary.

Clearness of Water.—See GOOD WATER, CHARACTERISTICS OF.

Clergy, Duration of Life in.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Clergymen's Sore Throat.—Those who use the voice a great deal in public speaking and singing are very apt to suffer from the strain. The most common affection is follicular pharyngitis, or "clergyman's sore throat." Much of this trouble is unnecessary, strictly speaking, or could be remedied if the right steps could be taken. The voice ought not to be used for continued and difficult efforts unless the possessor is in good health and strength. It ought not to be used in the crude, ignorant, and even unintentionally affected manner which is often heard and which fatigues the throat without need. The services of

a competent teacher in elocution are to be desired, not so much for rhetorical purposes as for training in the right way to work with the vocal organs. And by way of support, a little gymnastics, for developing the chest, shoulders, and abdomen, may properly accompany the process of developing the voice in some cases.—See also SORE THROAT, CLERGYMAN'S.

Clerks.—See SEDENTARY OCCUPATIONS.

Closing Pores of Skin, Effect of.—See PORES OF SKIN, EFFECT OF CLOSING.

Clot (*Dutch klot*, a lump).—A term used to express fluid matter thickened or coagulated as in *clotted* cream, which is thickened on coagulated milk, or rather the thicker fatty part of the milk separated from the thinner or watery part. It is specially applied to blood which has become thick or coagulated on exposure to the air.

Clothes, Airing.—See AIRING CLOTHES.

Clothes, Changing.—See CHANGING CLOTHES.

Clothes, Cleansing.—See CLEANSING CLOTHES.

Clothes, Light in Summer.—See LIGHT CLOTHES IN SUMMER.

Clothes, Philosophy of.—One of the principal defensive weapons which man employs in his struggle for existence, particularly in the north temperate and frigid zones of our planet, is his clothing. The chief object of clothes is to preserve us from outside influences: with the climate and region in which they are worn, they vary from thick suits of furs to rags around the loins; and the development of dress, and the part which it has taken in the history of civilization, form no unimportant subjects of research for the scientific student of mankind.

To understand the true philosophy of dress, we must remember that the human body exposed to a cool atmosphere at once begins to lose heat in three ways: 1, by radiation; 2, by evaporation of surface moisture; and 3, by conduction or direct conveyance of heat to particles of air immediately in contact with it. If now we cover our bodies with any fabric, we necessarily interfere with all three of these modes of cooling; but this obstruction is only a marked one for the few seconds or minutes required for the clothing itself to become heated. As soon as this is accomplished, we begin again to cool off, although less rapidly than before, because radiation from our "artificial surface" (as the outside of our garments is called) can only take place as fast as heat is carried to it by the relatively slow process of conduction through our clothes. The rate of conduction varies from that of a thin linen coat, in which it is very great, to that of a thick fur cloak, wherein it is very small, and upon this difference in conducting power the relative value of different articles of dress depends. It has been well said by Boerhaave that "Only fools and beggars suffer from cold; the latter not being able to procure sufficient clothes, the former not having the sense to wear them."

There is a natural moisture on the surface of the body of every healthy person, which, like all other moisture, tends to evaporate and produce cold. This, however, is greatly checked by clothing of all kinds, which protects the body from the movements of the air, which, as every one knows who has seen the old sailor's practice of holding up a wetted finger to find how the wind blows, is particularly favourable to evaporation. If the dress, however, should by any chance become wet, its own moisture will continue to evaporate until it is dry, and necessarily produces, in the meantime, a coldness which the person who may wear it is said to feel. It is thus that a wet jacket or any other article of clothing soon becomes uncomfortable, and even in the warmest weather is apt to

produce a chill exceedingly dangerous to health.

By careful adaptation of the thickness of our clothes to the coldness of the weather we can avoid, to a great extent, the necessity of becoming "hardened," as it is called, to changes of external temperature, because we can actually prevent cold air from coming in contact with any considerable portion of our skins; but how far it is advisable for us to become tender in this manner is a debated point among sanitary scientists. It is perhaps good advice for every one to determine the question for himself, by trying cautiously, when in full health, how far he can bear exposure to winter's cold without injury; but, of course, such experiments should not be undertaken by those in whom any dangerous hereditary tendency exists.



VERTICAL SECTION OF THE SKIN, SHOWING THE SWEAT GLANDS.

That the reader may gain some idea of the delicate nature of the surface of the body and of the necessity of protecting it from the injurious influences of cold, a vertical section of the skin, showing the sweat glands, is given in the accompanying illustration: *a*, *b* represents the epidermis, or cuticle; *c*, the pigmentum, or colouring matter of the skin; *d*, the rete mucosum,

or gelatiniform layer situated beneath the epidermis; *c*, the corium; *f*, the subcutaneous areolar or adipose tissue; *g*, the sudoriferous glands; *h*, the convoluted duct of the sudoriferous glands conveying the sweat; *i*, the free surface of the skin. Dr. Graham says: "It should be remembered that the more sedentary men become in their habits and pursuits, the more do they stand in need of warm clothing, especially in a changeable climate; and as we are now very generally much more sedentary than our forefathers, so ought we to clothe somewhat warmer; whereas, the fact is, we in general clothe lighter, especially about the feet and legs."

Many individuals find that in mild seasons they can endure going without an overcoat up to the middle or end of November, until, after some unusually prolonged exposures, or an exposure while otherwise out of health, they take cold and are obliged to envelop themselves carefully and thickly for the rest of the winter. Few sanitary rules, in fact, require obedience more inexorably than that which commands us, after having once commenced with a certain thickness of outside wraps, to continue with the same till spring returns.

It is probable that thousands of cases of consumption amongst women take their rise from the exposure of the neck and upper part of the chest to cold air, by the costume absurdly called "full dress" in fashionable society. But not only is the danger of laying the seeds of disease from passing into cold air whilst too thinly clad to be considered, but we must remember that to keep up the heat of the body without the aid of warm clothing in winter requires a great expenditure of nervous energy, which in turn is the equivalent of a large amount of life-force. Some individuals seem to be possessed with a sort of mania for hardening themselves and their families, in apparent ignorance of the fact that, to counteract the influence of cold without the aid of broadcloth and wraps, requires this great waste of nervous force, which, if not exhausted, might be applied to far higher

purposes. Had the nervous fluid which gave activity to the reasoning faculties of Sir Isaac Newton's brain on that autumn day when he saw the apple fall from the tree, been called away from his cerebrum to energize the nerves of his skin in consequence of his being too thinly clothed, we might never have had the discovery of gravitation which has made his name illustrious. Not only is it superfluous, but positively injurious, to exhaust our powers unnecessarily, when mere mechanical appliances, like clothing, will obviate the continuous expenditure of vital energy.

Practically, persons in ordinary good health will find it much more convenient to have all the different coats or dresses intended to be worn about the same time of year nearly equal in thickness, as a change to even a slightly thinner article of clothing is very apt to involve a severe cold, unless it is made exactly in correspondence with the rise in the thermometer. Leaving off warm clothing too early in the spring is well known to be a common cause of coughs and colds.

It is certainly also the height of imprudence, in hot weather, to lay aside woollen under-clothing in favour of a cotton garment; and yet no error is more common than this. A thin flannel shirt, or, if a cotton shirt is worn, thin woollen under-clothing, would save many of the worst colds of the summer season—colds which are often more dangerous and more troublesome than those of any period of the year.

Another way in which clothes save the wear and tear of our bodies is by diminishing the amount of heat our bodies must produce by the oxidation of elements of food; and it is thus that, as Dr. Liebig expressed it, our clothing is merely an equivalent for a certain amount of nutriment—the more thickly we are clad, the less urgent becomes the appetite for food, because the loss of heat by cooling, and consequently the amount of heat to be supplied by food, is diminished. Since oily food furnishes, during its digestion and assimilation, the largest amount of heat, it is an

especial favourite among the inhabitants of cold climates, and the amount of fat required by the Esquimaux, in addition to their fur-lined garments, to enable them to withstand the rigour of a polar winter, is proverbial.

Clothing and Food in Exercise.—See EXERCISE, CLOTHING AND FOOD IN.

Clothing during Pregnancy.—

Throughout the whole period of pregnancy the clothing must be warm. More danger is likely to result at this time from insufficiency than from excess. But while the clothing must be warm, it should as far as possible combine the quality of lightness as well. For this purpose no material answers so well as flannel, and with it the pregnant female should be clothed from head to foot.

The clothing of the pregnant woman must be adapted to her state, and the various articles of dress worn must be made sufficiently loose to admit of the free expansion of the growing womb, and must not press injuriously upon the breasts. If stays are worn, they should be made so as to admit of perfect freedom of movement, and anything like an attempt at making them fit neatly, at all times hurtful, will prove much more injurious now. So great a necessity was it deemed by the Romans to have the garments loose at this time, that they compelled their women when they became pregnant to lay aside the girdle. Tight clothing during pregnancy, by pressing injuriously upon the womb, leads to the imperfect development of the child, and may give rise to miscarriage.

Clothing in Old Age.—In old age, owing to the vital processes going on within the body being less, the power of generating heat is less, and the temperature of the body sinks. To compensate for this, the clothing should be warm; but, as far as possible, warmth should be combined with lightness, as heavy articles of clothing are apt to be a burden to the aged. The articles

best suited, therefore, to this period of life, are those which are made of flannel, this material combining warmth with lightness, retaining heat and preventing the entrance of cold in a way that no other article of clothing does. In a climate like ours, where there is incessant change in the weather, and where the body is almost daily subjected to great variation of temperature, nothing with which we are acquainted can enable the individual to stand these changes half so well as flannel. It should, therefore, always constitute a very important element of dress in those who are advancing or advanced in years.

Clothing, Materials of.—Man has adapted substances from both the animal and vegetable kingdoms to make into clothing, those of animal origin—furs, hair, wool, silk, and leather—being all worse conductors of heat, and so warmer, than the vegetable fibres of cotton, flax, hemp, and jute. The raw material should be light, porous, and durable, and a bad conductor of heat.

The wool and hair of animals, and the fibres of plants, contain air in their structure, and, in direct proportion to its amount, so they vary in their warmth-maintaining power. Dr. Hammond's experiments are very decisive on this point. He found that a vessel of water, temperature 150° Fahr., cooled down to 140° Fahr., if left uncovered, in 5 min. 11 sec. If the vessel were covered with linen shirting, it lost the 10 degrees of heat in 7 min. 24 sec., with cotton shirting in 9 min. 42 sec., with white flannel in 12 min. 35 sec., and with woollen cloth (dark blue) in 14 min. 5 sec.

When we wish to secure protection against cold winds, leather and indiarubber prove the most useful; next come woollen goods, and last, a great way behind, may be reckoned cotton and linen fabrics. Clothing made of wool can absorb a far larger amount of perspiration with less danger of the wearer's taking cold, from its moist contact with the skin, than any of the other materials of dress ordinarily employed. Dr. Parkes has proved that, in comparison to either cotton or linen,

the absorbing power of wool, according to relative weight, is double, and, according to surface, quadruple.

Clothing, Poisonous.—See POISONOUS CLOTHING.

Clothing, Rules for.—The chief rules in regard to clothes are:—1. That they should be made of soft or pliable materials, so as not to obstruct the free and easy motion of the limbs, or the circulation of the fluids in any part of the body. 2. They should be made of such a shape as to be comfortable from their case. 3. They ought not to be warmer than is necessary to preserve the body in a proper degree of temperature. 4. Our garments, more especially those next the skin, should be made of substances easily cleaned, if necessary. 5. They should be suited to the constitution and age of each individual.



CLOVE-TREE. (*Caryophyllus aromaticus*.)

Cloves.—The clove-tree is a native of the Molucca Islands, particularly Amboyna, and attains the height of a laurel-tree. It is an interesting fact that no verdure is ever

seen under it. From the extremities of the branches numerous flowers grow; at first white, then they become green, and next red and hard, when they have arrived at the clove state. When they become dry, they assume a yellowish hue, which subsequently changes into a dark brown. As an aromatic the clove is highly stimulating, and yields an abundance of oil. There are several varieties of the clove: the best is called the "royal clove," which is scarce and blacker and smaller than the other kinds. It is curious that the flowers, when fully developed, are quite inodorous, and that the real fruit is not in the least aromatic.

Club-Foot.—Club-foot is often nothing more than a contraction of the muscles of the calf, which draw up the heel and eventually disturb the integrity of the ankle joint. The complaint also comes on at an early age, and is sometimes congenital. By proper means it admits of relief, and often of a cure, but, with regard to either relief or cure, recourse must be had to a surgeon.

Coal Dust, Influence of, on Lungs.—The breathing of coal-dust in the process of mining changes the colour of the entire lung in a few years to jet-black. This blackening of the lung is not confined to colliers, however, for it is always found in post-mortem observations of adults, to some extent, in patches of lung-tissue, and seems not to produce, ordinarily, any kind of disturbance. There seems, however, to be no doubt that, when in excess, it may injure a miner's lung, or, at all events, may aggravate other diseases. Provision is commonly made for ventilating mines, which affords considerable relief to this evil.

Coal Tar, Nature and Uses of.—Coal tar in almost any form in which it can be used is a powerful disinfectant. Where coal tar is distilled, it furnishes first a light oil, which is a naphtha, and next a heavy oil. This last is in great part composed of creosote, and contains also an acid known as carbolic acid. These two substances are

among the most powerful of all known antiseptics, disinfectants, and deodorizers. Meat steeped for about twenty-four hours in a solution of one part of creosote to a hundred of water, is rendered incapable of putrefaction, and acquires a delicate flavour of smoke. It is, indeed, the presence of this principle in wood smoke which gives to the latter its characteristic smell, its property of causing lachrymation, and its power of curing meat and fish.

Within the last few years disinfecting compounds, manufactured out of coal tar or its distillates, have been extensively used. They are prepared mainly by mixing coal tar with sulphate of lime (gypsum) or fuller's earth, in such proportions that the result will constitute a dry powder. This powder is wonderfully efficient in delaying the processes of decomposition, and in deodorizing and destroying all noxious effluvia. For use in chamber vessels, close stools, etc., the French make a very neat fluid preparation, by mixing equal parts of coal tar, alcohol, and hot soft soap.

Cobweb for Ague.—See AGUE, POPULAR REMEDIES FOR.

Coca.—This is an intoxicating agent used by the natives of South America. It is extensively cultivated in Peru, and is used by the natives in the same way as tobacco is chewed in Europe. Wonderful effects are attributed to this poison. It is said to increase the strength of those who take it. It produces a delirious effect on the system, and the Indians are in the habit of secreting themselves in the woods and abandoning themselves for days together to the pleasures of coca intoxication.

Coca, General Effects of.—Von Tschudi says that "the action of the coca-leaf depends on the way in which it is used. If infused and drunk like tea, it produces a mild excitement succeeded by wakefulness; and if taken strong, prevents the approach of hunger; prevents, also, the usual breathlessness when climbing hills;

and when taken in large doses, dilates the pupil and renders the eye intolerant of light. It is not often used in this way, however, but is ordinarily chewed in the form of a ball or quid, which is turned over and over in the mouth as is done with tobacco. Its action is then more gradual and prolonged than when only the infusion is taken. It also differs considerably in character, because the constant chewing, the continued action of the saliva, and the influence of the lime or ashes chewed along with it, extract from the leaf certain other constituents which water alone does not dissolve when it is infused after the manner of tea. The chewing of coca in excess imparts a bad breath (abominable, according to Weddell), pale lips and gums, greenish and stumpy teeth, and an ugly black mark at the angles of the mouth. The inveterate coquero—as the confirmed chewer of coca is called—is known at the first glance. His unsteady gait, his yellow skin, his dim and sunken eyes encircled by a purple ring, his quivering lips and his general apathy, all bear evidence of the baneful effects of the coca juice when taken in excess.

The first evil effect of coca, according to Poppig, as quoted by Professor Johnston, is to weaken the digestion; it then gradually brings on a disease locally known as *opilacion*. Biliary affections, with all the painful symptoms which attend them in tropical climates, and, above all, costiveness, are frequent and severe. The appetite grows very uncertain, till at last the dislike for all nourishment is followed by an inordinate appetite for animal food. Next, dropsical swellings and boils come on, and the patient, if he can get it, flies to brandy for relief, and thus drags out a few miserable years till death comes to his relief.

Coccyx (*Lat.* *coccyx*; *Gr.* *kok'kūx*, cuckoo). The name given collectively to four small bones constituting the termination or extremity of the human spine, being attached to the lower end of the

os sacrum, or sacrum simply. It is said to be so called from its resemblance to the beak of a cuckoo. It is the rudimentary tail, but instead of projecting back, as in mammals generally, it is curved forwards, and is not visible externally.—See VERTEBRÆ.

Cochlea (Lat. cochlea, a snail or snail-shell).—The scientific name given to the spiral cavity of the internal ear. In Fig. 1 we have the cochlea laid open. 1, 2, 3, 4, 5, 6 represent the bony shelf forming



FIG. 1.—THE COCHLEA LAID OPEN (magnified 4 times), Rudinger.

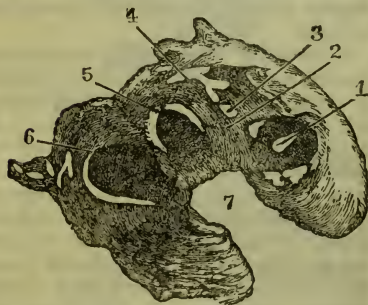


FIG. 2.—THE BONY COCHLEA LAID OPEN (showing the soft parts within, magnified about 2½ times, modified from Hagen).

part of the partition between the two passage ways of the cochlear canal; 4 represents also the hook-like end of this spiral shelf as it winds round the bony pillar; 2; 7, point of entrance of the nerve of hearing into the cochlea.

In Fig. 2 we have represented the bony

cochlea laid open, and showing the soft parts within. 1, ampullar enlargement on superior semicircular canal; 2, vestibular nerve branches going to 8, the elliptic sac, and the ampullar enlargement at 1 and 10; 3 and 6, bony shelf of the cochlea, on which lie the fringe-like nerve filaments; 4 and 5, the basilar membrane, on which lies the organ of Corti; 7, the round sac, 9, the ampulla of the posterior semicircular canal.

Cochlea.—See INTERNAL EAR.

Cocoa.—The substance known by this name is prepared from the seeds of a plant known to botanists as the *Theobroma cacao*, and is a native of South America. The seeds, several of which are produced in a long pod, are roasted before being used. When thus prepared, they are called cocoa nibs, and are sometimes boiled, and made into a decoction in this form. More frequently, however, the seeds are crushed and made into a paste, and sold as “cocoa paste.” When flavouring matters, such as vanilla, are added, the preparation is called “chocolate.” Sugar is sometimes added to cocoa, and always to chocolate when sold in the form of a sweetmeat, of which there are great varieties. Whilst cocoa differs greatly from tea and coffee in its composition, it nevertheless resembles them in possessing an alkaloid called theobromine, which acts in the same manner on the system as theine (tea). In addition to this substance cocoa contains a half part by weight of a fixed oil or butter, which gives a very decided character to its action on the system. Cocoa also contains in every pound three ounces of flesh-forming matter, so that it constitutes a food at once heat-giving and flesh-forming, and admirably adapted to all the wants of the system. Cocoa as an article of diet is to be recommended in all cases where a nourishing and heat-giving diet is required, and with milk and sugar forms a very healthful food for breakfast or supper. The fat does not agree with some persons, and it is in these

cases that an infusion or decoction of the "cocoa nibs" is recommended.

Good cocoa nibs contain :—

	In 100 parts.	In 1 lb. oz. gr.
Water	5·0	0 351
Albumenoids	16·9	2 314
Fat	51·1	8 70
Theobromine	1·3	0 104
Cacao-red	3·2	0 201
Gum, etc.	10·9	1 326
Cellulose and lignose	8·0	1 122
Mineral matter	3·6	0 252

Theobromine constitutes the active principle of cocoa ; the taste and aroma of cocoa are chiefly due to an essential oil and to tannin. For general use, cocoa will be found a milder and less stimulating beverage than tea or coffee.

Cocoa, Adulteration of.—By way of adulterating cocoa and chocolate, fraudulent manufacturers chiefly employ the husks of the cocoa-bean, starch, sugar, fat, ground roots, and ochre.

Cocoa, Substitutes for.—The substances which can be used as substitutes for Mexican cocoa are comparatively few in number. It is necessary for their employment in this way that they should contain an odoriferous principle of some degree of fragrance, abundance of fat, and a considerable amount of ordinary nutriment. Almost the only vegetable productions from which beverages resembling cocoa have anywhere been made are oily nuts and seeds. Amongst these, the earth-nut (*Arachis hypogæa*), a sort of oily underground pea, is roasted in South Carolina, and is then prepared and used much in the same way as chocolate. In Spain, the root of the *Cyperus esculentus*, or earth-chestnut, is roasted and employed to take the place of both coffee and chocolate, but particularly the latter, which is much consumed in Spain.

Cocoa-nuts.—This nut is the produce of a species of palm which grows in

the East Indies and Ceylon. The seed is large, with a thin shell. The shell is lined with a white flesh, and the interior contains a fluid which is called the milk of the cocoa-nut. The flesh contains oil and albumen, and is used extensively as an article of diet in the countries where it grows. It is eaten in this country to a limited extent, and made into puddings, cakes, etc. The seeds of all palms contain a clear fluid in their interior, which is regarded by the natives as well as Europeans as a very agreeable and cooling beverage.

The solid kernel of the cocoa-nut when fresh weighs about 1 lb., and has the following composition :—

	In 100 parts.	In 1 lb. oz. gr.
Water	46·6	7 200
Albumen, etc.	5·5	0 385
Oil	35·9	5 325
Sugar, etc.	8·1	1 130
Cellulose	2·9	0 203
Mineral matter	1·0	0 70

Cod.—This fish has a more dense fibre than whiting or haddock, and contains also more glutinous matter ; it is an excellent aliment, but, upon the whole, is not quite so digestible as whiting or haddock. It is generally preferred when large ; but such fish are frequently coarse.

Coffee.—The effects of coffee on the system are too well known in this country to require description. It exhilarates, arouses, and keeps awake ; it counteracts the stupor caused by fatigue, by disease, or by opium ; to a certain extent it allays hunger, gives increased strength and vigour to the weary, and imparts a feeling of comfort and repose. Its physiological effects on the system, so far as these have been investigated, appear to be that, while it stirs up the brain to greater activity, it soothes the body generally, makes the change and waste of matter slower, and, as a natural consequence, the demand for food less. All these effects it owes to the conjoined action of three ingredients, very

like those contained in tea. These are, a volatile oil produced during the roasting, a variety of tannic acid, which is altered during the roasting, and the substance called theine or caffeine, which is common to both tea and coffee.

The composition of roasted coffee is in general as follows:—

	In 100 parts.	In 1 lb. oz. gr.
Water	5·0	0 350
Albumenoids	15·0	2 174
Theine (Caffeine) . .	0·7	0 43
Tannin	3·9	0 281
Minor extractives . .	34·4	5 219
Cellulose	38·5	6 62
Mineral matter . . .	4·5	0 323

The addition of milk (which should always be hot) and sugar heighten the nourishing qualities of coffee, and in the morning render it a more substantial article for breakfast. When taken after dinner to promote digestion, it should be without milk, and, when the palate can be reconciled to it, without sugar.

Coffee, Action of, on System.

The coffee berry is the produce of a shrub, indigenous to Arabia, but since cultivated in many of the warmer parts of the world. Its fruit and foliage are well represented in the accompanying illustration.

The action of coffee on the human system is due chiefly to the oil it contains, and consequently is greatest when roasted, but its extractive and also highly nitrogenous principle must exert considerable influence upon the organs of digestion.

Coffee acts powerfully and peculiarly on the ganglionic system of nerves, and their ramifications, and all the organs which are supplied by them. It elevates the vitality of these nerves and quickens all their actions. The brain is likewise markedly acted upon by it, and hence the increased sensibility and greater energy of that organ during the use of coffee, and the removal of all sense of fatigue or disposition to sleep. Upon this depends, in addition to its local influence on the

organs of digestion, the utility of coffee in counterbalancing the effects of narcotic poisons, such as opium or belladonna, and the favour it has found among literary persons from enabling them to carry on their studies through the midnight hours without feeling oppressed by sleepiness. It greatly promotes digestion if taken after dinner, and also checks the disturbance of the digestive system arising from the too free use of wine. It excites the vascular system, and renders more powerful the contractions of all the muscles, both voluntary and involuntary. It fits the system, therefore, to resist the influences of cold and



COFFEE (*Coffea Arabica*.)

damp, and is proper for night travellers and the inhabitants of humid climates, such as Holland. In warm climates it removes the languor which oppresses those who are exposed to the excessive heats, and helps the stomach to perform its office.

Coffee, Adulterations of.—

Coffee is chiefly adulterated with chicory, burnt beans, acorns, sawdust, etc. These frauds may, of course, always be avoided by purchasing the coffee berries unground, either roasted or in their green state.

Coffee after Dinner.—*See AFTER DINNER.*

Coffee as a Deodorizer.—Coffee is a powerful deodorizer; it has instantly destroyed the smell of putrefying meat, and in half a minute it has permanently cleared a house of the effluvia of a cesspool. To use coffee for these disinfecting purposes, dry the raw bean, pound it in a mortar, and roast the powder on a moderately heated iron plate until it is of a dark-brown tint; then sprinkle it in sinks or cesspools, or lay it on a plate in the room which you wish to have purified.

Coffee, Disadvantages of.—

Coffee, although it possesses many qualities which recommend its use, is not without its counterbalancing disadvantages. For plethoric persons, and those who have a tendency to abdominal congestions, it is unsuited, and for persons subject to piles it is in general improper, as well as for females under certain states of their system. It is likewise hurtful to persons having a very excitable vascular system, being upon the whole more suitable for slender persons, or those advanced in life, than for the young or very robust. Coffee, like all stimulants, when used to an injurious extent, gives rise to disturbances of the nervous system, particularly painful twitchings of the upper eyelid, to congestion or hæmorrhages, loss of digesting power, and obstruction of the liver and vena porta. Unlike the nervous symptoms caused by tea, the greatest number of these complaints subside or disappear on discontinuing the use of the strong beverage.

Coffee, Medicinal Properties of.—

Coffee is credited with the possession of important medicinal virtue. The great use of coffee in France is thought to have abated the prevalence of the gravel in that country. In the colonies of France, where coffee is very greatly used, as well as in Turkey, where it is the principal beverage, not only the gravel but the gout is conspicuous by its absence. Professor Johnston mentions the case of a gentleman who was attacked with gout at the age of

twenty-five, and who had it severely till he was upwards of fifty, with chalk-stones in the joints of his hands and feet; but the use of coffee, then recommended to him, completely removed the complaint.

In order to detect the mixture of chicory in coffee, the simplest way is to place the powder in cold water. Chicory gives a coloured impression in the cold, which coffee does not, and the proportion of coffee may be guessed at by the depth of the colour. The presence of coffee in chicory is discovered by boiling the suspected mixture with quicklime, filtering, evaporating to dryness, adding sulphuric acid and peroxide of manganese, and gently heating, when golden yellow crystals of a substance called *kinon* will sublime, should coffee be present.

Cold Affusion.—See AFFUSION, COLD.

Cold Applications.—Cold, when applied, must operate steadily, uniformly, and over a definite space. If the bag of ice or the cold cloths slip about as the feverish patient turns and twists, it is useless, perhaps harmful: if it is allowed to become warm before being renewed, it had better not have been applied.

(1) *Cold Cloths.*—Apply single folds of linen or cotton dipped in cold water, and replace them by fresh cool ones before they become warm.

(2) *Cold Drip.*—Stand a pitcher of water on some bureau or table higher than the patient's bed. Put one end of a long strip of lint or lamp-wick in the pitcher, and lay the other across a cold cloth, which is applied to the inflamed part. A continuous little stream of cold water is thus conveyed to the part, and the water which passes from it must be caught in a basin on the other side.

(3) *Cold Drop.*—A bottle filled with cold water can be suspended above the bed sometimes, where there is a curtain ring in the ceiling, for instance, and a piece of lamp-wick half in, half out, and made to depend

just over the part to which cold is to be applied. A constant drop of cold water is thus secured. Care must be taken that the water is conveyed into a basin, and not allowed to soak the bed. This cold drop is more easily used with a wounded arm or leg, which can be placed in a trough made of indiarubber cloth, and sloping towards a basin or pail. An excellent fixture for applying continuous cold consists of a rubber bag with a flexible tube at either end—one being attached to a faucet or water-cooler, and the other hanging over a pail. The bag, through which a stream of cold water is passing, is applied where desired, having between it and the part a damp cloth.

(4) *Ice*.—Ice may be broken up into pieces, and put into a bladder, or an indiarubber ice bag. The bladder should not be more than half full, and it should be securely tied around the neck. The best way of applying ice to the head is to place a smooth piece of ice, two or three inches long, and about one and a half broad, in a cup of soft sponge, and pass it round over the head. The sponge absorbs the water, and the pain of the cold is avoided.

(5) *Ice-bags*.—Put pounded ice with a little water into a thin bladder or indiarubber bag. The water remains cold until the last bit of ice is melted; renew before this. By these bags, continuous cold is secured, and no danger from frost-bite need be apprehended. Ice can be easily pounded by wrapping it tight in one end of a thick cloth, and then slinging the cloth with force against a stone hearth. Do not fill the ice-bag full; half-filled, it adapts itself better to the heated part.

Cold Bath.—Cold baths are invaluable aids in promoting and preserving health, if properly used in suitable cases, but may become dangerous agents, causing even fatal results, if employed by the wrong individuals, at improper times, or with excessive frequency. Very cold plunge baths—that is, those below 50° in tempera-

ture—should only be indulged in by the most robust, and even with them it is doubtful whether the shock to the system is not more injurious than the after reaction is beneficial. In every instance the test for the advantage of a cold bath is very simple and easily understood, being merely the occurrence or non-occurrence of this reaction or “glow,” as soon as the skin is dried; when such a glow is promptly felt, the bath *does* good, and may be repeated at the same or a slightly lower temperature; but if such reaction takes place slowly or not at all, the person feeling chilly, and the lips, the skin beneath the nails, and indeed that of the external surface generally, continuing for ten or twenty minutes bluish instead of pink, the bath *does* harm.

Before quitting this subject, a few remarks may be made upon the impropriety of plunging into the cold bath after the body has been greatly heated by exercise. It may be safely asserted that in the earlier stages of exercise, before profuse perspiration has dissipated the heat, and fatigue debilitated the living power, the cold bath is generally safe and useful; on the contrary, nothing is more dangerous than for a person to go into the cold bath after exercise has produced great perspiration, and terminated in languor and fatigue. The reason of this is sufficiently obvious. In the first case, the exercise is short of fatigue, being just such as produces an increased action of the vascular system, with some increase of heat, and thus secures a force of reaction under the shock which otherwise might not always take place: in the second instance, where the person waits till he is perfectly cooled, and some degree of languor follows as a necessary consequence, the heat is not only sinking rapidly, but the system parts more easily with the portion that remains, and on plunging into cold water a sudden chilliness is felt which is alarming and extremely dangerous. So that were an individual compelled to go into cold water after very active exercise, he had far better go in *when hot*, than *when cooling after having been heated*.

Cold Bath, Action of.—This bath is employed to increase the vigour of the constitution, and is used with a view to causing reaction. The best time to take the cold bath is in the morning; but as many invalids are unable to produce the necessary amount of reaction at this time, it had better be deferred till after breakfast, when the body is in a condition more fitted to stand the shock. The patient ought not to remain in the bath longer than five minutes, as reaction may be prevented and danger result in consequence.

The temperate bath causes less shock than the cold, and consequently is followed by less reaction. It is better suited for invalids and children than the cold.

Cold, Causes of.—A common cold is one of the most frequent complaints in this kingdom, and is often attended with very serious effects. It may, therefore, be as well to give a few rules for avoiding it. It should be observed that a cold is generally produced by the individual going from the external cold air into the warm air of a heated room. When a person, in cold weather, goes into the open air, every time he draws in his breath, the cold air passes through his nostrils and windpipe into the lungs, and consequently diminishes the heat of these parts. As long as the person continues in the cold air, he feels no bad effects from it; but as soon as he returns home, he approaches the fire to warm himself, and very often takes some warm and comfortable drink to keep out the cold, as it is said. Now, this is the very way to fix a cold in the head and chest, because of the sudden transition effected in the temperature of the parts by the incautious use of heat. The individual who follows this practice soon perceives a glow within his nostrils and breast, as well as over the whole surface of the body, which is succeeded by a disagreeable dryness and huskiness felt in the nostrils and breast. By-and-by a short, dry, tickling cough comes on; he feels a shivering, which makes him draw nearer to the fire, but all to no purpose; the more he tries

to heat himself, the more he becomes chilled.

It should, therefore, be a rule with every one, when they come out of a very cold atmosphere, never to go at first into a room that has a fire in it, or if they cannot avoid that, to keep for a considerable time at the utmost distance from it, and, above all, to refrain from taking warm or strong liquors for some time. This rule is founded upon the same principle as the treatment of frost-bitten parts. If they were brought to the fire, they would soon mortify; whereas, when they are first rubbed with snow, and brought to their natural heat gradually, no bad consequences follow. Hence, if the following rule were strictly observed, *when the whole body, or any part of it, is chilled, bring it to its natural feeling and warmth by degrees*, the frequent colds experienced in winter would, in a great measure, be prevented. Those who are much subject to colds are, for the most part, those who are weakly, and to such we would strongly recommend the diligent use of the flesh-brush to the neck and chest, hands and feet, twice a day, combined with much active exercise in the open air. Few indeed are the constitutions that these practices will not harden and fortify.

Another common cause of taking cold is the laying aside of warm, especially of flannel, underclothing, heavy cloth overcoats, etc., too early in the spring, before the wintry weather has entirely left us. Damp articles of clothing, particularly wet shoes and stockings, are probably among the best friends that doctors and druggists ever had.

A greatcoat must be kept in a room where there is a fire. If it has been hung up in a cold, damp hall, as it often is, it will contribute about as much to your calorification as if you wrapped a wet blanket about you.

The evil results from wet feet may often be diminished, or entirely averted, by taking off the damp shoes and stockings, rubbing the feet dry, toasting them before a hot fire or hot blast from a furnace, and putting on dry, well-warmed stockings and shoes as thick or thicker than those laid aside. To

be effectual, however, the programme must be gone through *at once*, without waiting to become rested enough, after fatigue, to make the additional exertion easy; even a delay of five minutes may be sufficient to annul all benefits from such a drying process, and permit the occurrence of congestion of some internal organ which will lead to serious or fatal illness.

Cold Cloths.—See COLD APPLICATIONS.

Cold Douche.—In some cases of fever, and in certain brain affections, this form of bath is made use of. No percussion need be employed in this instance.

Cold Drip.—See COLD APPLICATIONS.

Cold Drop.—See COLD APPLICATIONS.

Cold, Dry, Plan of Cure for.—Dr. J. C. B. Williams recommends a dry plan of cure, of the efficacy of which he has a high opinion. It has the merit of simplicity, for it consists merely in abstinence from every kind of drink; no liquid, or next to none, is to be swallowed until the disorder is gone. He allows, without recommending it, a tablespoonful of milk or tea for each of the morning and evening meals, and a wine-glassful of water at bed-time. One great advantage of this plan is that it does not require confinement to the house. The man whose business calls him abroad may, with appropriate clothing, pursue his customary employment, and his cure be going on all the while. In fact, exercise, inasmuch as it promotes perspiration, helps the recovery.

Dr. Williams observes that while this treatment is serviceable in catarrhal bronchitis, it is *most* serviceable in the snivelling cold in the head. It must be put in practice at the very commencement of the disorder.

Cold, Effect of, on Blood-vessels.—One of the most unfavourable effects of cold is the driving of a great part of the blood out of the little blood-vessels

which run everywhere just beneath the surface of the skin, as a mere mechanical result of its contracting and constricting influence. Of course, as this blood, which is driven away from the surface, must have some place to go to, it flows inwards to the warm parts of the body, which the external cold has not reached, as a necessary consequence filling them too full of blood, or, as it is technically called, congesting one or more of the vital organs. Whichever one of these happens to be our “weak spot” (and there are few of us who can boast of being entirely free from all imperfections of this kind) is, of course, the least apt to recover promptly from the temporary congestion so produced, and equally, of course, the most liable to become the seat of a serious inflammation, of which congestion is the first stage. If, for example, a man’s lungs are his weak point, inflammation of the lungs, called also lung-fever and pneumonia, running on, if neglected, to consumption, may be the result; or should his intestines be least able to resist an attack of disease, a more or less severe diarrhoea is often the direct consequence of exposure to cold.

The most dangerous times for us to risk sudden cooling of the surface of the body are, 1st, during sleep; 2nd, when perspiring after violent exertion, or from other causes; and 3rd, soon after taking a warm bath. A majority of us, indeed, can probably trace most of our coughs and colds to want of sufficient care in these respects.

Cold Feet and Sleeplessness.—It is always hurtful, and sometimes dangerous, to go to bed with cold feet, which is often the case with persons even in good health, who have been on their feet a great deal during the day. On removing the shoes at night, the cooler air condenses the perspiration of the day, causing a clammy dampness, and the feet soon become icy cold, thereby preventing sleep.

“The association between cold feet and sleeplessness,” says a writer in the *British Medical Journal*, “is much closer than is commonly imagined. Persons with

cold feet rarely sleep well, especially women. Yet the number of persons so troubled is very considerable. We now know that if the blood supply to the brain be kept up, sleep is impossible. An old theologian, when weary and sleepy with much writing, found that he could keep his brain active by immersing his feet in cold water: the cold drove the blood from the feet to the head. Now what this old gentleman accomplished by design is secured for many persons much against their will. Cold feet are the bane of many women. Light boots keep up a bloodless condition of the feet in the day, and in many women there is no subsequent dilatation of the blood-vessels when the boots are taken off. These women come in from a walk, and put their feet to the fire to warm—the most effective plan for cultivating chilblains. At night they put their feet to the fire, and have a hot bottle in bed. But it is all of no use; their feet still remain cold. How to get their feet warm is the great question of life with them—in cold weather. The effective plan is not very attractive, at first sight, to many minds. It consists in first driving the blood-vessels into firm contraction, after which secondary dilatation follows. See the snow-baller's hands! The first contact of the snow makes the hands terribly cold, for the small arteries are driven thereby into firm contraction, and the nerve-endings of the fingertips feel the low temperature very keenly. But, as the snow-baller perseveres, his hands commence to glow; the blood-vessels have become secondarily dilated, and the rush of warm arterial blood is felt agreeably by the peripheral nerve-endings. This is the plan to adopt with cold feet:—They should be dipped in cold water for a brief period; often just to immerse them, and no more, is sufficient; and then they should be rubbed with a pair of hair flesh-gloves, or a rough Turkish towel, till they glow, immediately before getting into bed. After this a hot-water bottle will be successful enough in maintaining the temperature of the feet, though without this preliminary it is impotent to do so. Disagreeable as the plan at first sight

may appear, it is efficient; and those who have once fairly tried it, continue it, and find that they have put an end to their bad nights and cold feet. Pills, potions, lozenges, 'nightcaps,' all narcotics, fail to enable the sufferer to woo sleep successfully. Get rid of the cold feet, and then sleep will come of itself."

Cold, Influence of.—Extreme cold, such as we occasionally experience during the winter—as, for example, in the bitterly cold winter of 1890-91, when frost and snow prevailed from November 24 to January 20, with but very little intermission—is sometimes fatal in its effects; but it is more commonly a cause of death in proportion as the Polar regions are approached. Cold in its minor degrees gives rise to the painful affections of frostbite and chilblains, the former affecting the nose, ears, and fingers, and the latter the feet.

As Nature's mechanism of keeping any portion of the body warm when surrounded by colder air or water is by sending hot blood from the heart through it, the wise thing to do when compelled to stay out in severe cold weather is to keep in active movement as much as possible, and so prevent, if we can, any tendency to stagnation of the blood. After prolonged exposure, however, the whole mass of the blood is chilled below its usual temperature, and becoming, therefore, less efficacious as a heating power, as well as less energetic as a stimulant to the heart and the brain, exercise grows extremely difficult, and a disposition to sleep almost uncontrollable. This inclination to go to sleep must be resisted to the utmost by those who feel it stealing over them in circumstances such as have been mentioned.

Cold in the Head.—Coryza, or cold in the head, is produced in some persons by the emanations from certain animals, as the horse, or from certain flowers, as the rose, or drugs, as ipecacuanha. This form is usually of a very transient nature, though often quite severe. It is closely allied to

hay fever. Some drugs administered internally, as iodide of potassium, occasion similar symptoms. A cold in the head is a minor hardship of life at any season, but a summer cold is a hardship indeed. It is as easy to catch, and a great deal harder to get rid of, being kept up by the slightest puffs of air upon an over-sensitive skin, on the one hand; and, on the other, by the local irritations of dust, the perfume of flowers, the pollen of plants, and other substances suspended in the air, which are either not present at all, or to a very much less extent at other seasons of the year. Many influences of this kind, not potent enough to occasion the affection acting alone, are active agents in prolonging it when fairly established. The popular opinion that this kind of cold is apt to last longer in summer is based upon correct observation.

Cold in the Head, Treatment of.—Whilst it is not to be advised that persons suffering from a cold in the head should neglect it, it is candid to say that it is an affection which cannot always be cut short by treatment. Under ordinary circumstances, the symptoms being moderate in intensity, no very active treatment is called for, the most useful agents being those of a tonic character, and particularly repose. Quinine, from its known influence in dissipating local congestion, is, when judiciously used, of great advantage; so also are minute amounts of opium, both locally and internally; small frequently repeated doses of carbonate of ammonia are highly recommended. If the secretion be excessive and long-continued, astringents are advised; but they are, in our opinion of questionable value. But those are not tools to be taken rashly into untrained hands. Measures looking to the establishment of sweating are not always beneficial nor without risk, and had better be avoided, except at the very outset of the trouble.

In the earliest stages, such old-fashioned, time-honoured and honourable remedies as a hot mustard foot-bath, hot sleeping draughts, or the like, taken with a view to

provoke abundant sweating, are excellent: but they must be taken at the beginning to do the good they are capable of: and it is not to be forgotten that harm may come of imprudent exposure next morning.

A plain, nutritious diet, but sparing consumption of fluids, attention to ventilation and temperature, and to the weight and warmth of clothing required.

Cold in the Head, Preventive Treatment of.—Preventive treatment consists in attention to the general health, and the *greatest care in avoidance of exposure when fatigued*. An over-sensitive skin may be hardened by systematic cold or lukewarm sponging, by regular exercise in the open air, and by long hours of sleep upon a hard bed with light coverings.

Schneider thought that the secretion of catarrh was an effort on the part of nature to purge the blood of injurious accumulations, the result of high living, and that the abundance of riches brought to its possessor an abundance of phlegm. This view led him to a choice of remedies as unpalatable to those given up to luxurious living as they are useful in building up and maintaining health: "Inasmuch as catarrhs are born of luxury and indolence, therefore appropriate medicine consists in sobriety, in continence, in bodily exercise, and in tranquillity of mind."

Cold, Keeping out the.—For persons who are apt to suffer from exposure nothing is so injurious as the use of spirits to keep out the cold. The effect of alcohol taken in cold weather is simply to deaden the sensibility of the body to the feeling of chilliness, and temporarily to hasten the circulation, which leads people to fancy that they are being "warmed." But then there follows reaction, during which the circulation is depressed and warmth diminished. If exposure is continued until this period arrives, the effect of it, of course, is doubly dangerous. Hot coffee and tea have long been known as the safest of all warming winter beverages for men constantly working out of doors.

The best stimulant of a ready kind for fatigue is Liebig's Essence of Beef; strong coffee or strong tea come next to it.

Cold, Results of Sudden Exposure to.—In the higher walks of life, as well as in the lower, not rarely acute nervous disorders come from sudden exposure. Not long since the case was reported of a gentleman who stretched himself on the cold damp ground when heated, and the same evening suffered from paralysis, produced by congestion of his spinal cord. Every practitioner of medicine must have seen instances of paralysis of the face, due to the sudden exposure of the heated countenance to a draught of cold air, or the thinly slippers feet to the cold earth. Such instances of acute nervous disease, due to sudden exposure, are, however, very rare, compared with those in which the nervous trouble has been secondarily caused by diseases of the circulation, or of the kidneys, which have been the immediate results of the exposure. Pneumonias, rheumatisms, etc., following a cold, are patent to every one; but the damage wrought by the exposure is often far less apparent, though none the less real and destructive. It is to these insidious results that attention must needs be directed, because they are most often overlooked. Habitual physical hardships are certainly more frequently productive of nervous affections in the lower than in the higher ranks of life; but it is by no means certain that this is true of what may be called acute physical hardships and acute nervous trouble. Habituated from childhood to extremes of temperature, to damps and excessive exertion, the Alpine guide or the sailor is a very different being from the man he guides over the mountain or across the water.

Cold, Simple Cures for.—Most persons have their own individual remedy for the cure of cold. One individual will wrap the head on going to bed in a flannel nightcap, and take a glass of warm negus, whey, or gruel; another will take a tumbler of cold water with or without a spoonful of

sal-volatile. A very good way to stop a catarrh on its accession is to go to bed early, to take some warm drink, with a teaspoonful of paregoric elixir and a mild aperient pill, half an ounce of Epsom salts, or a Seidlitz powder early on the following morning. As a general plan an abstemious diet should be observed, and diluent drinks, as barley water, whey, etc., freely taken. A mild aperient should be administered, as a dose of compound senna mixture, followed by a dose of saline mixture with antimonial wine and nitre, if the patient be of an inflammatory habit; otherwise the saline draught with ipecacuanha wine every three or four hours; and at bed-time, a spoonful of paregoric mixture added, or five grains of Dover's powder may be taken, and the legs bathed as high as the knees in warm water for ten minutes. Should the catarrh be severe, with much mucous discharge from the nose and eyes, it is better to remain in bed, but not to keep the apartment too warm, or to be wrapped in too much clothing, as although it may accelerate the cure of the cold, it will increase the susceptibility, and render the person more liable to a recurrence of the attack.

"There is also a period of catarrh," says Watson, "which has gone on unchecked, when you may hasten its departure—'speed the going guest'—by a good dinner and an extra glass of wine. But this pleasant method is scarcely to be advised for persons of delicate habit, or in whom any phthisical tendency is suspected to exist, or who are prone to inflammation."

If any one has a bad cold, great good will be done by a Turkish bath, a Russian bath, or an ordinary warm bath; but an "old woman's bath" will do as much good, costs less, is universally available, and is attended with no danger, there being no need of going out of doors for some hours, thus avoiding the risk of taking cold. The last bath named is an old-fashioned "sweat," brought about by being tucked up in bed in warm blankets, and drinking hot teas, until a most profuse perspiration is induced, and kept up for hours. Even after one has

been careless or foolhardy enough to run the risk of taking a severe cold, he can often escape the effects of his rashness by removing all damp clothes as quickly as possible, soaking the feet for ten minutes in hot mustard-water, applying a large mustard plaster to his back and covering up well with warm blankets in a warm room, so as to produce free perspiration. The flow of perspiration from the skin under such circumstances is much promoted by drinking one or two cups of hot tea—camomile tea, for example; and such home remedies, if thoroughly and above all promptly applied, will often prevent a serious illness.

An excellent prophylactic against taking cold, and a means of counteracting the ill effects of cold when taken, is to be found in taking from 5 to 10 drops of spirits of camphor on a piece of loaf sugar about every two or three hours, until the sensation of chilliness is checked. An occasional dose is sufficient as a prophylactic. In cases of cold, also, if it can be managed, especially when taking spirits of camphor, it is useful to lie in bed for one day at all events, and longer if necessary.

"By raising the temperature of my room," says Dr. Kitchiner, "to about 65°, taking a full dose of Epsom salts and a broth diet, and retiring to rest an hour sooner than usual, I have often very speedily got rid of colds."

All medical writers agree that a cold must be broken up within the first forty-eight hours, or it will run its course. The regulars recommend, that as soon as a person discovers he has taken cold, he should shut himself up in a room of uniform temperature, drink warm drinks, bathe his feet in hot water, and take four compound cathartic pills at bed-time, and a drachm of Epsom salts in the morning. He should also leave off animal food for a few days; and if the chest be painful, apply a common witch or porous plaster.

Another school, on the contrary, recommends active exercise in the open air, sufficient to produce perspiration; abstinence from food, or not to eat anything except a

piece of dry bread for breakfast and dinner, and nothing for supper; and liberal indulgence in cold water, drinking at least two tumblers on going to bed and on rising in the morning. They believe that the old saw, "stuff a cold and starve a fever," has been a source of infinite mischief. As food makes blood and blood makes phlegm, the more food the more phlegm, which is often the cause of most harassing coughs.

It is believed that a cold may be broken up almost infallibly, if the person, as soon as he discovers the premonitory symptoms, will abstain from food for, say, thirty-six hours, go to bed in a warm room, wrap up well, and drink hot tea of any kind.

Dr. Hill thinks that the great majority of colds are taken "by cooling off too quickly after exercise." Persons exercise until a perspiration is produced, and then seek a cool seat or a pleasant breeze. The wisest and safest plan, after exercise, is to go into the house, shut the windows and doors, keep hat and coat on, and wait until there is not the slightest perspiration seen on the forehead or felt on it with the hand.

If people who have been exposed to cold or wet through the day would bathe their feet and hands in warm water at night, they would escape many colds and fatal diseases. Make it a constant study, during all seasons of the year, and at all hours of the day and night, to guard against even an instant's feeling of chilliness; this simple precaution would prevent three-fourths of all the coughs, colds, and pneumonias which afflict and destroy the race.

Cold, Symptoms of.—We are familiar enough with the expression "to catch cold," and the sensations attending the process, but yet it would be difficult for any one of us to define precisely what is meant by the expression.

A person engaged in his usual pursuits, conscious of no change in his surroundings, nor in his relation with them, in weather not even, it may be, characterized by any unusual change of temperature or atmospheric state, becomes suddenly aware that

he has caught cold. Or, as more frequently happens, he has made some injudicious change of raiment, or sudden atmospheric changes have taken place, or his feet have been wet; or, after active exercise, he has thoughtlessly seated himself in a draught or air, and the surface of his body, or some part of it, has been chilled. Presently, or after the lapse of some hours, and, in point of fact, often without his being aware that he has been chilled or taken cold at all, he begins to experience the symptoms of a mild febrile state. There is a general feeling of *malaise*, into which a sense of muscular weakness enters largely; a disposition to shiver, attended with chilly sensations which come and go, provoked by the slightest puff of air, or sometimes by changes of position; the hands and feet are cold, and it is only by toasting before the fire, or being covered up in bed, that feelings of comfortable warmth can be transiently secured. There is a marked tendency to sweating, which adds not a little to the unpleasantness of the situation. If not actual slight fever, there is feverishness, and the heat of the head is in notable contrast with the coldness of the extremities. Muscular soreness, with pain on motion (*Myalgia*) is often present.

Acute inflammatory conditions of internal organs may follow "cold," and in that case the special fever (irritative fever) of the graver malady will show itself. If no complications arise, a cold, or a feverish cold, runs a brief course.

The symptoms following taking cold are usually widespread or constitutional; and local symptoms are more frequently manifested at other remote parts of the body than at the part actually chilled. It is not necessary that the entire surface of the body be cooled; a small area is enough. Nor is it necessary that the change of temperature be very decided, though it is usually more or less prolonged. (See also COLD IN THE HEAD.)

Colds in Spring.—A very common cause of taking cold is the laying aside of warm, especially of flannel, underclothing,

heavy cloth overcoats, etc., too early in the spring, before the wintry weather has entirely left us. Damp articles of clothing, particularly wet shoes and stockings, are probably among the best friends that doctors and druggists ever had. All undue and too early change of clothing should be avoided. Our forefathers gave us good advice in the old saw:—

"Before May is out, never cast a clout."

Cold Weather, Going to bed in.—See GOING TO BED IN WINTER.

Colic (*Gr.* kol'ikos, pertaining to bowels, from ko'lon, great intestine).—Colic is a gripping pain in the bowels, chiefly about the navel, and often accompanied with a painful distension of the whole of the lower region of the bowels, with vomiting costiveness and spasmodic contraction of the muscles of the abdomen. There are several varieties of this disease, the principal of which are the stercoraceous colic, or iliac passion; the Devonshire, or painter's colic; the flatulent colic; and the constipative colic. We shall not notice each of these separately, because the causes and treatment are, for the most part, the same in each variety.

Causes.—The complaint is produced by various causes, such as crude indigestible fruits; long-continued costiveness; cold beverages on a heated stomach; catching cold in the feet or bowels; violent purgatives; worms; calculus or other concretions formed in the intestines; transferred gout or rheumatism. The cause of the painter's colic is invariably the poisoning of lead received into the system, from exposure to its fumes, or from taking it internally, as is sometimes done by persons who drink impure wine or cider.

Treatment.—As a rule, the painful conditions of colic are signs of intestinal disturbance which necessitate some opening medicine, of which, for this purpose, castor oil is the best. An ounce may be given with a few drops of laudanum—not more than ten—or a little spirit of chloroform. Should

the pain be severe, a turpentine stupe may be applied to the belly.

Colic, or Pain in the Bowels, Homœopathic Treatment of.—

This is occasioned by a variety of causes which induce severe pain in the region of the bowels, accompanied by vomiting and cold perspiration all over the body. The sufferer should have a warm bath and be well covered up with clothes in bed, and

and pain mainly caused by indigestion, *Mercurius*; for colic in children, *Camomilla*. Doses for adults, one drop of the tincture in one tablespoonful of water every three hours; for children, half the quantity; for infants, one-fourth the quantity.

Collar Bone, Fracture of the.—

In fracture of the collar-bone, it almost always happens that one of the fractured ends slips over and rides on the other, in



FIG. 1.—FRACTURE OF THE CLAVICLE.

have flannels plunged in warm water and wrung out as dry as possible applied to the bowels. If the abdomen be very tender when touched and the patient be feverish, *Aconitum napellus* is indicated. For colic accompanied by severe spasmodic pains, *Belladonna* is required; for colic arising from partaking of food too plentifully, accompanied by restlessness and grinding of the teeth in sleep, *Coffea*; for intensification of pain at night, with nausea and loose, greenish evacuations, *Mercurius*; for spasms

which case the nature of the accident is at once apparent.

Fracture of the clavicle or collar-bone is shown in Fig. 1. In this accident the shoulder becomes flattened, and the arm being drawn in towards the side of the chest causes a lessening of the axilla to take place.

Special apparatus used in the treatment of fracture of the clavicle is shown in Fig. 2. Its object is to brace the shoulders well back and retain them in this position.

Colon (*Gr. kolon*, large intestine).—The colon is all that part of the large intestine which ascends from the cæcum to the upper part of the abdominal cavity, runs across the top of the abdomen, and descends on the left side to the pelvis, where it terminates in the rectum. These three divisions of the colon are known as the ascending colon, the transverse colon, and the descending colon. Several physiologists have

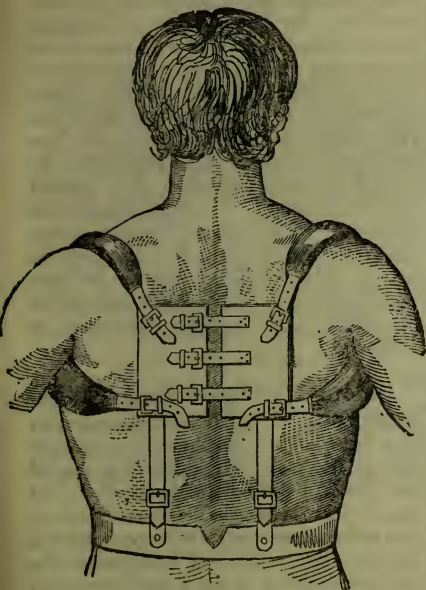


FIG. 2.—FRACTURE OF THE CLAVICLE.

supposed that the colon performs some other function than that of a mere recipient of material. Sir G. Home imagined that it formed fat—an hypothesis which would have received some slight support from the fact that the fattest animals have generally the largest colons, did we not know that persons have lived and enjoyed good health for many years with an artificial anus formed by the cæcal extremity of the small intestines. which sufficiently proves that the large

intestines are not essential to the maintenance of life.

Colostrum. — See NURSING, FIRST STAGE.

Colour-Blindness.—Among the remarkable phenomena connected with vision is that of an inability to distinguish certain colours and shades of colours, which recent investigation has proved to be much more frequent than was suspected. Dalton, the celebrated chemist, published an account of his infirmity in this respect, and the name of Daltonism was for a long period given to it.

People are colour-blind when their retina will not perceive some of the rays of light. Light is made up of three primary colours, and when overlapping in the spectrum are known as the colours of the rainbow. When mixed, white light is produced; now, each colour has a different velocity, light being supposed to be made up of imponderable particles travelling at a vast speed through space. The eye can only see those colours which have a certain velocity, and in ordinary persons these colours are red, blue, and yellow, with their compounds—green (blue and yellow), orange (red and yellow), and purple, or violet (red and blue). In some cases the retina may not be able to see one or other of these colours. The bluish tinge seen in solutions of quinine and horse-chestnut is called fluorescence, and is due to the fact that extra rays of the spectrum are then made visible to the human eye.

Colour-Blindness, Causes of.—Colour-blindness is the inability to distinguish certain colours. The most common form of colour-blindness is that in which red is deficient. It is frequently called “Daltonism,” because first carefully described by the well-known chemist Dalton, who was himself a subject of it. He was a strict Quaker, and when he was about to be presented to Court, it was thought by his friends that it would be impossible to induce him to wear the scarlet robe in which custom demanded that a doctor of civil law should

appear. But it seemed to him like a harmless grey, and finding it comfortable, he persisted for several days in wearing it about the streets of London, surmounted by a broad-brimmed hat, and with drab pantaloons peeping out beneath it.

Colour-blindness is sometimes produced by disease, but usually exists at birth, and is often hereditary. It will be readily understood that in many occupations it is a serious disability, and as the subject of it is frequently unconscious of the defect, the eyes should always be tested before such occupations are undertaken. Some otherwise excellent artists have been spoiled by it. It is a matter of grave importance in the case of seamen and of railroad engineers, and has lately attracted much attention in that connection all over the world. A green light at night marks the "starboard," right-hand, side of a vessel, and a red light the "port" side; while a red light on railways is the signal for danger. A colour-blind pilot or look-out has no means of knowing, on a stormy night, whether a vessel that he must pass is steering to the right hand or to the left; and a locomotive engineer, who cannot distinguish between red and green, does not know the difference between danger and safety to the hundreds of passengers whose lives are in his hands.

Colour-Blindness, Prevalence of.—This defect is much more frequent than is commonly supposed. Of a large number of men examined in Europe and America, four or five per cent. have been found colour-blind. Women enjoy, comparatively, a singular immunity. Drs. Cohn and Magnus found only one colour-blind among 2,318 school-girls tested in Breslau, and Dr. Jeffries found only two among nearly 2,000 women and girls examined at Boston. No satisfactory explanation has been given of this fact, but it appears to be pretty well established, and, until a careful system of testing has been adopted, ladies who feel aggrieved that their sphere of usefulness is too much restricted, might well inscribe it on their banners in an advance,

by land and sea, on every position where signal-lights are used.

As the crystalline lens grows dense with age, particularly if there is commencing cataract, a yellow tinge often takes the place of its natural colourless transparency. This must partially impair the perception of the complementary colour, blue, to the extent, at least, of requiring a deeper tinge to produce a given effect. Liebreich, therefore, when lecturing on the artists, Turner and Mulready, took the ground that the excessive blue in the later pictures of Mulready, who continued to paint after he was seventy years of age, was due to yellow degeneration of the crystalline lens, and maintained that this excess of blue could be neutralized, and these pictures could be restored to the harmony of the artist's earlier productions, by looking at them through a glass slightly tinted with yellow. Persons who have been operated upon for cataract sometimes complain, after the yellowish lens has been removed, that everything appears to them unnaturally blue. This effect soon passes off as the retina becomes accustomed to white light.

Colour-Blindness, Remarkable Example of.—Amongst all the examples of colour-blindness that have been recorded, one of the most extraordinary is that of one Harris, a Cumberland shoemaker. He seems to have been insensible to every colour, and to have been capable of recognising only the two opposite tints of *black* and *white*. His first suspicion of this defect arose when he was about four years old. Having by accident found in the street a child's stocking, he carried it to a neighbouring house to inquire for the owner. He observed the people called it a *red* stocking, though he did not understand why they gave it that denomination, as he himself thought it completely described by being called a *stocking*. The circumstance, however, remained in his memory, and, with other subsequent observations, led him to the knowledge of his defect. He observed also that, when young, other children could dis-

cern cherries on a tree by some pretended difference of colour, though he could only distinguish them from the leaves by their difference of size and shape. He noticed, too, that by means of this difference of colour they could see cherries at a greater distance than he could, though he could see other objects at as great a distance as they—that is, where the sight was not assisted by the colour.

Colour, Heat and.—See HEAT AND COLOUR.

Colour of Eye.—It is not generally known that the eyes of infants are always blue, and that they do not begin to assume their permanent colour until the sixth or eighth week. There is therefore truth, as well as poetry, in the statement that babies look about them “in blue-eyed wonder.” The wonder may be left to poets and philosophers, but the blue is always a practical fact. It is not uncommon to see different colours in the eyes of the same person; and even in the same eye, half of the iris is sometimes brown and the other half blue.

There is a popular notion that dark eyes are stronger than light ones. There is no truth in this, except so far as they are better protected against excessive light; hence light eyes prevail among northern nations

and dark eyes among the races who live in the glare of a tropical sun. (See PHYSIOLOGY OF EYE.)

Colour of Lungs.—See LUNGS, COLOUR OF.

Colour of the Skin.—See SKIN, COLOUR OF THE.

Colour of Water.—See GOOD WATER, CHARACTERISTICS OF.

Colours of Wall Papers.—See WALL PAPERS, COLOURS OF.

Columba Infusion.—See INFUSIONS.

Commerce, Wines of.—See WINES OF COMMERCE.

Commissure.—See EYELIDS.

Common Sore Throat.—See SORE THROAT, COMMON.

Comparative Longevity (*Lat. comparo*, I bring together for investigation; from *con*, together; *paro*, I place or put; *longus*, long; *ævum*, age).—The following tables and observations, taken from Mr. E. Ray Lankester’s “Comparative Longevity,” compiled from various sources, show the probable after life-time at different ages for various classes of the community:—

Age.	Labourers. Rural districts.	Peasants. Females.	Males. Rural districts.	Healthy livera. Both sexes.	Peasants. Both sexes.	Peasants. Males.	Bakers. All districts.	Clerks. All districts.	Liverpool. Males.	Miners.	Persons of intemperate habits.
0		53·71		49·00	52·61	52·00					
10	56·00	50·16	52·03	51·08	49·39	49·04	47·89	39·93	46·00	48·51	
20	47·90	43·68	43·89	43·45	42·21	41·46	40·02	31·83	37·95	40·67	15·55
30	40·59	36·82	37·22	36·64	35·96	35·51	32·25	27·57	30·14	33·15	13·80
40	32·76	29·93	30·09	29·64	28·86	23·33	24·47	21·85	23·15	24·92	11·62
50	25·07	23·08	22·79	22·44	21·95	21·40	19·09	16·04	17·09	17·53	10·86
60	17·82	16·42	16·23	15·37	15·16	14·56	14·06	12·42	11·96	11·85	8·94
70	11·34	11·23	10·81	9·61	9·61	8·77	8·76	8·76	8·61	8·70	
80	6·95	6·92	6·69	5·51	5·45	4·53	4·81	4·80	4·80	4·80	
90	3·80	4·10	3·80	3·05	3·54	1·64	2·35	2·34	2·35	2·34	
100	·50		·50				·50	·50	·50	·50	

The most degraded races have life shortened by starvation in old age, or even by being put to death by their fellows, while in civilized countries the aged are protected and looked up to with respect and treated with care.

European lives, and especially English lives, are the best, and seem to have the longest duration. Excessive longevity seems traditional amongst most nations, but there is great exaggeration on this point. Females in advanced life have a better expectation of life than males. The Fuegians, and other very degraded races, rarely exceed forty-five years of age, being in some cases killed and eaten by their children at that age. Man differs from animals in this respect, for whereas animals die when they lose their physical power and are unable to defend themselves, it is the characteristic of all civilized nations to foster, cherish, and respect old age.

Married persons have longer lives than the unmarried: a number of married persons gave a mean of 66·76; of unmarried persons a mean of 62·00.

Dr. Guy has also collected the ages at which a number of persons died at different periods of our history. Comparison of ages at death for three centuries gives the following result:—

Century.

16	1,500 facts gave a mean of	64·25
17	3,400 " "	60·36
18	2,800 " "	63·41

Composition of Bones.—See BONES, COMPOSITION OF.

Compounds of Body.—See BODY, COMPOUNDS OF.

Concussion (*Lat.* *concussio*, a shaking together; from *con*, together; *quatio*, I shake).—This term implies a shock, and in surgery it may be defined as an injury to some internal part of a living body inflicted by sudden external violence, not necessarily accompanied by an external wound. It may or may not be connected with fracture or

dislocation, or it may be accompanied by bruise or sprain.

The external violence is almost always a blow, or a fall; which latter, indeed, may be considered a blow, the force proceeding in this case from the momentum of the patient's body instead of the momentum of the instrument, which in the other case inflicts the blow. The nature of the injury is the same.

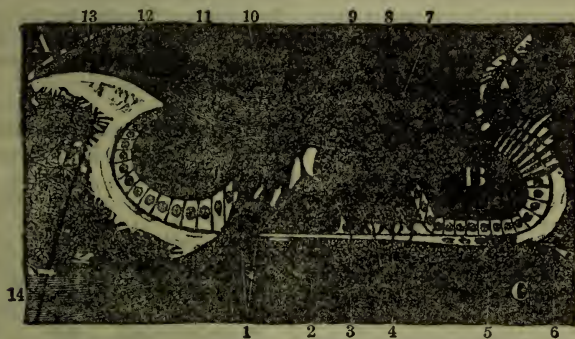
Concussion of the Brain.—This is the most common accident of this kind, and certainly it is the most important. When a person receives a blow on the head, or falls upon his head, and is stunned by the accident, he has experienced a concussion of the brain.

The effects of such concussion are sometimes so slight and transitory, that in a single minute or less, consciousness returns, and no further inconvenience is experienced, or perhaps a slight headache, or trifling degree of mental stupor may continue for a shorter or longer period. In severer cases the sufferer remains for a longer time unconscious, and his senses return very gradually; he first of all recognises some person about him; he ascertains from surrounding objects where he is, or that he is in a strange place; he has a confused notion that some accident has happened; in a little time he recollects where he was, or whence he started, some hours ago; and at length he traces in thought circumstantial occurrences down to the moment, or what is frequently the case, down only to within a few minutes of his accident. This degree of concussion is frequently attended with vomiting, and, indeed, this affection of the stomach succeeding to an injury of the head is very indicative of concussion of the brain. In still severer cases consciousness does not return for some days, or never fully returns. Symptoms of apoplexy, or palsy, of inflammation of the brain, or of high cerebral excitement without inflammation, may supervene, which may prove speedily fatal, or ultimately terminate in epilepsy, fatuity, or other chronic affection of the brain; or

those severe symptoms may terminate in slow but perfect recovery. With none of those formidable consequences of concussion have we anything to do. It is indeed only as to the treatment to be adopted immediately after the accident that we shall make any observations, for in all cases of a severe grade we conjure you to consign the sufferers, as speedily as may be, into the surgeon's hands.

If, then, you be a witness of such an accident as has been described above, or if you arrive upon the spot immediately afterwards, and find the patient senseless, or but partially restored to consciousness, you

concussion on the ear, but especially upon the drum-head, often last for life. In many of these cases, in which the drum-head is injured by concussion, injury is also sustained in deeper and more tender parts, viz., in the labyrinth and in the auditory nerve. Thus, a "box on the ear," a blow on the ear or head of any kind, or a fall, may be the direct cause of concussion and permanent deafness. Sometimes the deafness is total as well as sudden. These cases rarely recover hearing under any treatment, and it is doubtful whether anything could be done to prevent the loss of hearing had treatment been instantly applied. Where



DIAGRAMMATIC REPRESENTATION OF CORTI'S ORGAN, VIEWED IN PROFILE. Magnified between 300 and 400 times. (Modified and reduced from Hagen.)

will place him with as little disturbance as possible in a darkened room where the utmost quiet can be secured. Let the head be slightly raised. Apply warmth to the body and extremities by means of bottles, heated bricks, or flannels. Let the diet be low and the bowels be kept open. Watch, however, the amount of reaction; and if after an hour or two the pulse becomes full, the heat of the skin above the natural standard, and particularly if he complain of headache, proceed without hesitation to apply ice to the head or cold-water cloths, and adopt rest, quietude, and a low diet.

Concussion, Effects of, on the Internal Ear.—The injurious effects of

however, the deafness is only partial, and the ringing in the ear keeps up for some time after the concussion, no matter what its nature may have been, treatment may do much towards restoring the hearing. But whatever is to be done, must be done at once. In such cases, small doses of strychnia are probably our best means of treatment.

In the accompanying illustration the following are the parts denoted by the corresponding numbers:—1, the base of the inner-haired cells; auditory nerve passing between them; 2, section of blood-vessel; 3 and 5, the basilar membrane, which unites the edge of the bony shelf at 1, with the outer wall of the cochlea at 6, thus dividing

the cochlear canal into A, the vestibular scala or stairway, and C, the tympanic stairway; B, represents the so-called cochlear duct, separated from A by a membrane, 13, named after Reissner, its discoverer. 8, the outer pillar of Corti, leaning against 9, the inner pillar, forming Corti's arch; 4, outer haired cells, receiving nerve-filaments from 14, the nerve of hearing; 7, upper ends of haired cells, where the acoustic hairs are found; 10, upper ends of inner haired cells; 11, Corti's membrane; 12, upper lip of bony shelf. The nerve of hearing, 14, runs through lower part of shelf, and comes out at the lower lip at 1. Corti's organ may be said to lie between the lines 5 and 12.

The illustration is a diagrammatic representation of Corti's organ viewed in profile. There are about three thousand of these organs or arches of Corti in the human ear, each one of which, it is with good reason supposed, is specially tuned so as to respond to the various sounds of the musical scale.

Concussion of the Spine, or Trunk.—When a person receives a blow, or falls rather upon his back than his head, he is, perhaps, but little, if at all, stunned; he gets upon his legs, staggers, and falls again, his pulse is feeble, and perhaps irregular, his countenance is pallid, and he feels faint, but soon recovers sufficiently to walk home with some assistance. These are the symptoms of concussion of the spine, or of concussion of the trunk. The immediate practice is perfect rest and quiet, the patient lying upon his side or face. When reaction sets in, apply cold to the spine as in the case of concussion of the brain. If after the first symptoms have passed away he complains of some *local* pain over any part of the spine, you may deem it a case of concussion of the spinal marrow, and may expect a continuance of disturbed circulation; and anticipate, if the injury be severe, symptoms of partial paralysis, or some derangement of one or other of the vital functions. In such cases you will never err in ordering leeches and warm fomentations to the pained part, if the

surgeon has not by this time arrived to release you from your responsibility.

Condensed Milk (*Lat.* *condenso*, I make thick; from *con*, together, *densus*, thick).—There are several ways of treating milk so that it may be preserved for some time, but there is only one preparation of this kind which is extensively used; this is called *condensed* milk. The milk, however, has really not only been condensed by the removal of a very considerable proportion of its original matter, but it has received a considerable addition of sugar to preserve it. This condensed or preserved milk cannot, therefore, take the place of milk as a model food, the proportion of heat-givers to flesh-formers being too high. The following is an analysis of the three kinds of condensed milk most widely known and most generally used.

ANALYSIS OF PRESERVED MILK
(DR. PAYN'S).

	Anglo-Swiss.	Aylesbury.	English.
Casein . . .	18·52	17·20	16·30
Fatty matter .	10·80	11·30	9·50
Sugar of milk .	16·50	12·00	17·54
Cane sugar . .	27·11	29·59	27·06
Ash	2·12	2·24	2·39
Phosphoric acid	·649	67	·708
Water . . .	24·30	27·00	26·50
	100·00	100·00	100·00

Condiments (*Lat.* *condimentum*, seasoning).—Condiments, spices, and the like, are employed as provocatives, and must be distinguished from those substances which are in themselves nutritious. The name of condiment is given to those substances which are added to food with which salt is taken. Spices, on the other hand, are usually added to articles of food containing sugar. It is hardly possible, however, to draw any very well-defined line between condiments and spices.

Regarding the most common of these articles a few words need only be said here, as each of the chief condiments and spices are mentioned in this book in their alpha-

betical order, with such particulars regarding each as may seem interesting or useful. That condiment which is of most universal requirement and utility is salt, or chloride of sodium. It is the only one which is indispensable, for not only does it exist in the milk which forms the earliest nutriment of the infant, but at all subsequent periods of life it is needed. Independently of the part which this compound performs in the stomach during digestion, it is still further serviceable in the blood, and more so in the blood of man than in that of any other being. Besides, the use of salt greatly benefits the alimentary canal and hinders the generation of worms. It is one of the most ready means of rendering insipid food acceptable to the palate, as is noticed in one of the earliest compositions which have come down to us: "Can that which is unsavoury be eaten without salt?" (Job vi. 6).

Perhaps the next most important condiment is vinegar, which, when taken in moderation, greatly promotes the digestion of young meats of a gelatinous kind, such as veal.

Mustard and peppers of different kinds are also useful, and more so in warm than in cold countries, as they rouse the languid stomach and enable it to perform the digestion of food. Hot pickles, from containing vinegar at the same time, are often advantageous when used in moderation; but the abuse of such articles produces many serious effects, particularly obstruction of the liver, with its long train of disorders.

The use of spices and aromatic agents not only renders the food more pleasant, but enables the stomach to bear a larger quantity. Hence they are too often made the means of leading the gourmand to be guilty of excess; and that cook is often most prized who can most cunningly minister to the pampered appetite. This is turning cookery, a highly proper and commendable art, from its legitimate end. In the hands of an expert cook, alimentary substances are made almost entirely to change their nature, their form, consistence, odour,

savour, chemical composition, etc.; everything is so modified that it is often impossible for the most exquisite sense of taste to recognise the substance which makes up the basis of certain dishes. The greatest utility of the kitchen consists in making the food agreeable to the senses, and rendering it easy of digestion. But its perfection seldom stops here; frequently among people advanced in civilization the object to which it aspires is to whet the appetite, to appease capricious palates, or to satisfy luxurious vanity. Then, far from cookery being a useful art, it becomes a real pestilence, carrying with it a train of diseases, and not unfrequently the premature death of many of its infatuated votaries.

Condition of Body, Digestion and.—See DIGESTION AND CONDITION OF BODY.

Confinement, Approach of.—There are certain symptoms which manifest themselves towards the close of pregnancy, and warn the female that her confinement is now not very far off. One of the first of these symptoms to attract the patient's attention will be a perceptible alteration in the size of the abdomen. It will appear to her that she is less now than she was perhaps a month before; and whereas during the last few weeks she felt perfectly incapacitated for active exercise, she now feels able to move about with comparative ease, and experiences a greater desire for walking than she has done for some time past.

The breathing, too, which before was affected on the slightest exertion, is now free and performed without difficulty. The bowels and bladder begin now to give the patient trouble; she experiences a frequent desire to empty the bladder and evacuate the bowels. This is a wise provision of nature to keep the channel through which the child has to descend as free as possible from anything that would impede it in its course when labour has begun.

Besides those symptoms already enume-

rated, a discharge now makes its appearance, called, in popular language, *the show*. This discharge consists of mucus, and is of a whitish colour, or may be mixed with new blood. Along with this slight pains are experienced, which increase in severity and in the regularity with which they occur until the contents of the womb are expelled. The character of these pains may be described as "grinding," and whenever they are felt, and "the show" has made its appearance, the medical attendant should be sent for, or at least communicated with, that he may not be out of the way. The pains are at first slight and irregular, but as labour advances they assume a more bearing-down character, and the intervals between each pain become less. (*See also* LABOUR, PREPARATIONS FOR.)

Conjunctiva.—*See* EYELIDS.

Constipation (*Lat.* *constipo*, I crowd together, from *con*, together; *stipo*, I press).—Constipation is a symptom which may be due to disease of the bowels, or to an imperfect performance of their function. In the natural course, the food, after digestion by the stomach, passes down into the intestines, and, by the contraction of their muscular coats it is propelled onward, to be discharged once or twice a day from the rectum as excreta or fæces. Any disease, as ulceration or cancer of the bowel, which obstructs the passage of the food, will therefore cause constipation, and any condition which produces a paralysed or sluggish state of the muscular walls of the bowel will likewise cause constipation by removing or interfering with the propelling power.

There are few persons who have not experienced at some time or other the inconvenience of constipated bowels, and all who have suffered from constipation habitually will agree in regarding it as one of the greatest troubles of life. Not only does it indispose the mind to exertion and the body to exercise, but it casts a gloom over the spirits, and is productive of that general discomfort which ruffles the temper and embitters the ordinary enjoyment of life.

Feculent matter, even in its natural state, irritates the intestines if retained beyond the usual period; and how much more irritating must it prove when its characters have become altered by its being unduly retained. Irritation of the large intestines, so induced, extends by sympathy to the liver and stomach, and, by disturbing their functions, impairs digestion; from impaired digestion there must proceed impure chyle; from impure chyle impure blood; and if impaired digestion, produced and prolonged by habitual constipation, should endure not for months only, but for years, how can we wonder that the whole mass of the blood should become corrupt, or that the solids derived from that blood should be corrupt also? How can we wonder that eruptions should disfigure the body, or that untractable or malignant disease should break forth and shorten life? Can we hesitate, then, to believe that habitual constipation may be and is one frequent source of general disorder and of local disease?

With rare exceptions, people can never enjoy good health while they suffer from constipation—a state much more prevalent than is generally known or believed. Liver complaint, dyspepsia, headache, vertigo, and that tormenting disease, piles, are only some of the direct results of constipation, and give rise to an immense amount of human misery. We have no doubt that learning to have an evacuation of the bowels regularly every morning conduces far more to a man's health, happiness, and success in life, than a complete classical education, invaluable as that certainly is; and, when once the habit is properly established, nothing, absolutely nothing, should be permitted to interrupt it.

Constipation, A Cure for.—It is a common observation that sedentary persons are habitually subject to costiveness and its attendant evils. In the normal state the contents of the bowels are propelled partly by the successive contractions of the muscles which form the walls of the belly, and

separate that cavity from the chest, and partly by the contraction of the muscular fibres which constitute an important part of the structure of the intestines themselves. If, however, exercise be refrained from for many hours a day, as in sitting at a desk, the bowels are necessarily deprived of one important source of power; and, thus weakened, they are unable to act upon and propel their contents with the same regularity as when assisted by exercise. A slowness of action ensues, which no course of medicine and scarcely any modification of diet can overcome so long as sedentary habits are indulged in.

Constipation, Causes of.—Constipation may come on from some growth or ulceration in the intestines which prevents the progress of the excreta; there will be then more or less vomiting, which will for a time relieve the distention; pain over the seat of mischief, swelling of the abdomen, loss of flesh, and frequent sickness, will accompany the constipation. If the obstruction be high up, as in the stomach, nothing can be done for the constipation; if low down, and in the rectum, means may be taken to make an artificial opening in the loins to let out the fæces; but this can only be done in extreme cases.

Constipation may be only occasional, and due to taking indigestible food, as nuts, unripe fruit, etc., or to taking too large a quantity at once; the tongue will then be foul and white or yellowish, the abdomen full and painful, and a feeling of sickness may ensue. If the pain is very intense, so as to make one suspect *enteritis*, an opiate should be given to allay the urgent symptoms, and the constipation may be left alone for two or three days; then a small dose of castor oil or some mild purgative may be given. In cases of peritonitis, some liver diseases, emphysema, and other chronic affections, this symptom may prevail; but the treatment must then vary with the special cause. A regular action of the bowels should always take place in health every day, and for this purpose fresh air,

light, active exercise, and a wholesome diet, are the best provocatives.

Constipation, Homœopathic Treatment of.—The symptoms of constipation are too well known to require mention here. Where the constipation is habitual and obstinate, an enema of warm water or of warm water-gruel is of great assistance. For persons who have a bilious temperament and suffer from rheumatism, or when the constipation is accompanied by a chilly feeling, *Bryonia* is desirable; for constipation that is occasioned by sedentary occupation and accompanied by headache and a tendency to piles, *Nux vomica* is indicated, in alternation with *Sulphur* where constipation, is habitual. *Pulsatilla* is better suited for women than *Nux vomica*, and *Opium* is useful when constipation is the result of lead poisoning, with great difficulty of evacuation or utter inability in this direction. The doses in every case and of every remedy are one drop of the tincture in one tablespoonful of water administered every four hours till relief is obtained.

Constipation in Pregnancy.—Constipation is a very common condition from which the pregnant female suffers.

It is a very troublesome affection, and is due partly to the mechanical pressure which the enlarged womb exercises upon the bowel, and partly to “defective innervation of the bowels resulting from the altered state of the blood.” Women are, however, very careless in regard to the state of their bowels, and frequently allow days, and even a week, to elapse without making any effort to have them moved. By a little attention of a preventive kind, this disagreeable and sometimes distressing condition may be obviated. Whenever a pregnant female finds the ordinary calls to stool less urgent, and when the motions assume a more constipated character than formerly, these premonitory symptoms should not be disregarded. They are warnings which, if unheeded, may soon give way to more obstinate forms of constipation.

Constipation in Pregnancy, Treatment of.

Whenever the bowels became sluggish, let attention be paid to the diet and the daily exercise. If the diet has been faulty, let it be remedied, and let such articles as oatmeal porridge, ripe fruits, stewed apples, prunes, figs, and the like be taken. If the daily amount of exercise has not been taken for some time, let it be resumed, unless there be anything to prevent this being done; let her move actively about the house, doing a moderate amount of work daily, and let out-door exercise be taken. Many cases of commencing constipation may be checked by attention to these things.

If, however, the condition of the patient is more advanced, and the bowels have not been moved for several days, diet and exercise alone may prove insufficient to remedy the disorder; and when this is the case, recourse must be had to the employment of certain medicines. Of these, the best are such as cause least irritation. All violent medicines must be carefully guarded against during pregnancy, as they tend, from the disturbance to which they rise, to produce miscarriage.

One of the best medicines to which recourse may be had during pregnancy is castor oil. In its action it is certain, and as it causes no irritation, it is free from an objection which attaches to many medicines, rendering them unfit to be taken at this time. The dose may vary from a dessert-spoonful to a tablespoonful. Many people, owing to its disagreeable taste, have an aversion to castor oil. This, however, may be greatly lessened if the oil be floated upon warm milk, coffee, or orange juice. It may also be made into an emulsion with yolk of egg or mucilage. Another mild aperient medicine, and one which answers very well during pregnancy, is the Friedrichshall water, a small quantity of which taken first thing in the morning will gently move the bowels. A teaspoonful of the confection of sulphur, prepared according to the British Pharmacopœia, taken occasionally when required in a little milk or water, will prove very useful as a mild laxative.

Better, perhaps, than medicine for the cure of constipation is an occasional enema of simple soap and water or gruel, with one or two tablespoonfuls of castor oil in it. The quantity should be sufficiently large to stimulate the bowel, and for this purpose a pint of fluid is necessary. Many women have an objection to the employment of the enema for the relief of constipation, and will rather hurt themselves with purgative medicines than have recourse to it. This objection is altogether unfounded. If a proper instrument is used, it will give rise to little trouble; it can be employed by the patient herself, and in its action it is painless. Besides, when purgative medicines have been taken by the mouth for some time, they lose their effect, and the dose requires to be increased.

Frequently, when the bowels have been allowed to get into a constipated state, hardened masses of fecal matter accumulate in the gut, and by causing irritation of the mucous membrane give rise to an increased secretion when the patient supposes she is suffering from diarrhoea, and frequently employs astringent medicines for the purpose of checking it. She also suffers from headache, a feeling of fulness over the abdomen, and indigestion. An enema of soap and water or a tablespoonful of castor oil with fifteen drops of laudanum, will answer best for the correction of this condition. Frequently, when the patient is careless in regard to the state of her bowels during pregnancy, and feces are allowed to accumulate, they form hardened masses which give rise to the spurious pains from which many women suffer for some time previous to their confinement, and which prove very annoying to them. Besides, labour may be greatly retarded by an overloaded state of the bowels, and as the danger both to mother and child increases with delay, the risks become greater. That pregnancy will be a state of least departure from health, and that labour will in all probability be shortest and safest, where, along with attention to other things, the patient has not been negligent of the state of her bowels.

Constipation, Laxatives for.—

"The disposition to costive bowels," says Dr. Mayo, writing of indigestion, "may often be obviated by using articles of food which are laxative. Fruit generally has this effect; but all fruit is not equally good for the purpose. The best are grapes, currants, strawberries, raspberries, gooseberries, eaten at breakfast. Next peaches, nectarines, pears, apples, which may be conveniently eaten at luncheon. Fruit is less wholesome after dinner; but fruit tarts at dinner are free from objection. Cherries and plums can be eaten with least safety; they are liable to purge. Currants, again, which are otherwise excellent, with some produce heat of the lower intestines and hæmorrhoids, by their seeds lodging there. All fruit, likewise, as nature intended, is best used for a season only; the wholesomest, when pursued too long, will disagree either with the stomach or bowels.

"Vegetables are generally laxative; many find brown bread answer the same purpose. When they agree, these are unobjectionable means. But both are liable to produce heartburn and flatulence."

Constipation, Remarkable

Cases of.—It may be sometimes difficult to connect any distinct disorder with this torpid action of the apparatus of fæcation; yet the health of the persons in whom it occurs is seldom sound, and never robust. Even in the still more extraordinary cases of constipation (and the details of many such cases are recorded in the annals of medicine) in which persons have gone five, six, seven weeks, and even, as is stated, as many months, without a single fecal evacuation, no manifest—at least, no decided—injury to the health appeared to result for some time; but sooner or later, in almost every case, the enormously distended intestines became suddenly inflamed, and death followed with great rapidity. Two remarkable instances of this are on record, which it may be instructive to relate. A young female, who never had more than one evacuation every two months, during a

period of five years, and who enjoyed good health during all that time, at length went on for the space of seven months without passing a single fecal evacuation. Notwithstanding this extraordinary retention of the fæces, her health did not appear materially to suffer, until at last inflammation suddenly came on, which rapidly terminated life. Mr. G——, a medical officer in the French service, had always been costive from birth. He ate largely, but seldom passed a stool oftener than once in one or two months, and his abdomen assumed a large size. At the age of forty-two, his constipation was unusually prolonged to three or four months. In 1806, after medicines had been taken to procure a stool, which had not been passed for upwards of four months, abundant evacuations continued for nine days, and contained the stones of raisins taken a twelvemonth before; but the constipation returned. In 1809 the enlarged abdomen became painful, vomiting supervened, and he died at the age of fifty-four, having seldom through life passed more than four, five, or six stools in the year.

Constipation, Remedies for.—

Constipation having once commenced, soon becomes habitual, and does not attract attention till some pressing consequence arises, which, having been removed or relieved, the same state of constipation is allowed to recur and to persist.

Persons should not sit long at stool. Less than ten minutes should include the whole operation, because if the position is habitually protracted, the unusual strain favours the formation of piles, or the protrusion of the lower bowel, as much as a sudden and forcible effort would.

Travelling has generally the effect of discouraging the action of the bowels; and on some occasions to the extent of producing great inconvenience by constipation. Ladies have been known to become very ill from this cause. A confined state of the bowels always increases the feverish heat which arises from travelling in a close carriage. Persons proposing to make long journeys would con-

sult their comfort by providing themselves with means to obviate constipation, or the pleasures of their excursion may be very much broken in upon. The same remarks apply to voyages by sea.

Habitual constipation is not unusual in women after a confinement, in people of a nervous temperament, and in those who lead a sedentary life; those also who are in the habit of frequently taking opening medicine, pills, etc., are liable to it. In such cases an altered diet will nearly always suffice, and cause no after ill effects.

By the aid of diet much may often be accomplished. A glass of cold water, taken on rising in the morning, will in some promote an action of the bowels. A light breakfast to those who are sedentary will favour this action, especially if eaten soon after getting up, when a heavy or full breakfast is of very questionable propriety.

Coarse brown or bran bread is very efficacious, the bran acting as a salutary stimulus to the peristaltic action of the intestines. It is open sometimes to the objection of the bran exciting irritation in the rectum, on which account some persons are unable to continue its use.

Figs, prunes, mustard-seed, and ripe fruits are taken with the same view, and often with good effect.

With these simple remedies should be combined a sharp walk every day, and, when advisable, a cold-water bath should be used every morning. Habit is a most important element in preventing constipation; no one should postpone the process, and in health the performance of the function ought to occur regularly about the same hour every day. An occasional aperient may be required, and then a mixture containing Epsom salts or some similar preparation can be ordered; the effervescent citrate of magnesia is often given, and, better still, for those who can afford it, a wine-glass or two of Pullna Water may be taken the first thing in the morning with great benefit. By the use of these means, habitual constipation may nearly always be cured, if it has not lasted too long. In children, a similar

treatment may be adopted; while in infants an altered diet, and a little magnesia occasionally, mixed with the milk, will suffice for a cure.

Constituents of Milk.—“The chief constituents of milk,” says Professor Church, “whether cow’s milk, human milk, goat’s milk, ass’s milk, or the secretion of other mammals—are casein, lactose, or sugar of milk, milk-fat, and phosphates. The nature and variations in composition of cow’s milk are the most important part of the chemical study of this subject. Cow’s milk, from a herd of healthy animals, properly fed, presents a remarkable uniformity of composition. But the total amount of nutrients in it will vary within certain rather narrow limits with the following circumstances. Morning milk will often be poorer in total solids than evening milk; much watery food, as brewer’s grains, etc., will impoverish the milk; a small daily supply of oil-cake will add about 1 per cent. to the total solids of milk; milk from cows pastured upon poor and over-stocked land will be poor in quality and reduced in quantity; milk drawn last from the udder—the ‘stripplings’—will be richest, especially in cream, and consequently in milk-fat or butter. The following may be taken as an average composition of cow’s milk:—

	In 100 parts.	In 1 pint.	
		oz.	gr.
Water.	86.3	17	330
Casein.	4.1	0	370
Milk-fat	3.7	0	333
Lactose or milk sugar	5.1	1	22
Mineral matter . .	0.8	0	72

“Thus the total solids of milk amount to 13.7 per cent.; the solids, other than fat, being 10 per cent. It is very rare to find genuine and healthy milk showing a percentage lower than 9 of solids, not fat, but some instances have been recorded where these constituents were found to be as low as 8½ per cent.; but in these cases the food of the cows must have been deficient in solid nutrients, or very watery. The ratio of

flesh-formers to heat-givers, reckoned as starch, in average cow's milk is as 1 to $3\frac{1}{2}$.

"One pint of cow's milk weighs about 1 lb. $4\frac{3}{4}$ oz.; if one pound of milk be digested and oxidized in the body, it is capable of yielding a force equal to 390 tons raised 1 foot high. The greatest amount of external work which it could enable a man to perform is 78 tons raised 1 foot high. One pound of milk can produce at the most about $\frac{3}{4}$ oz. of the dry nitrogenous substance of muscle or flesh."

Constituents of the Blood.—

See BLOOD, CONSTITUENTS OF THE.

Constitutional Liability to Pulmonary Disease.—See PULMONARY DISEASE, CONSTITUTIONAL LIABILITY TO.

Consumption (*Lat.* *consumptus*, destroyed; from *con*, together; *sumo*, I take).—Consumption, or Pulmonary Consumption, is the disease to which, technically, the name of phthisis, or wasting, is applied. By it is meant that form of lung disease where, first of all, there is a deposit of new material in the substance of the lung. After a time this softens and breaks down. It is expectorated, and leaves behind cavities. This process is accompanied by fever of a peculiar kind, and general wasting of the body; whence the name.

The processes which lead to this deposit are two in number: one is inflammation of the lung substance, and the other is the deposit of a new growth called tubercle. Most frequently the two processes are associated, for the deposit of the new growth sets up inflammation and its consequences.

The disease may assume a very acute form, such as cannot be mistaken, or it may steal on insidiously, especially if it spread from the air-tubes to the lung-substance. The consequence of such an inflammation is the choking up of the little cavities of which the lung consists in a portion of its substance, and the material thus deposited may either remain there for a length of time, or at once proceed to soften and break down. In this process

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the damaged material of the lung, too, may turn back. It may soften, as well as the newly-deposited substance, and, breaking down and being expectorated, leave behind a cavity in the surface of the lung. This process may grow quickly or slowly, sometimes very slowly, especially if other changes go on at the same time, such as indurate the texture of the lung, as in what has been called fibroid phthisis—a very slow form of the malady.

But, again, there may be a deposit of new substance, the process being by no means inflammatory, and this new growth, which is laid down in the substance of the lung, is called tubercle. Once deposited, its history is the same, or nearly so, as that of the inflammatory material laid down in the lung cavities.

There is yet another mode and kind of deposit—that due to syphilis. That is, perhaps, if a diagnosis can be made, the most hopeful variety of the disease. To both the former varieties of the disease there may be a strong hereditary proclivity; if so, this is a circumstance which tells most unfavourably on behalf of the patient.

Consumption a Contagious Disease.—

Is consumption contagious? To this important and momentous question many eminent physicians answer, Decidedly not; Dr. Graham answers as decidedly, Yes. The human body is very sensitive to infection, and, therefore, no one should for any great length of time sleep with an invalid actually in a consumption, or even strongly disposed to it. Young members of the same family ought not to be constantly with such an invalid.

"Since the investigations of Villemin, Wilson Fox, Sanderson, and others on the inoculatability of tubercle," says a writer in the *Lancet*, "and the spread of the disease from local infective centres, physicians are much less inclined than they formerly were to underrate the importance of contagion as a factor in the causation of this disease." Dr. Walshe, in 1860, considered the influence of contagion anything but proven; but

in 1871 he had considerably modified his views, for he said, "My belief in the reality of such transmissibility has of late years strengthened. I have now met with so many examples of the kind that *coincidence* becomes itself an explanation difficult of acceptance." Cases due to a supposed contagion are generally of an inflammatory character, and very rapidly run on to destruction of the lungs and a fatal termination. It is frequently asked why, if consumption be contagious, wives and husbands who have been in close attendance on their diseased consorts do not inevitably become affected? The answer to this query is that even when experiments have been carried out on animals, the tuberculizing process occasionally fails to take place, and the direct transmission of infecting particles from the lungs of one individual to another is obviously much more liable to failure. As a matter of practice, most assuredly it cannot be too strongly enforced that it is a very dangerous proceeding to regularly share the bed of a phthisical patient, and to be habitually in close contact with, and attendance on, such a person.

Consumption Caused by Exposure.—See CLOTHES, PHILOSOPHY OF.

Consumption, Causes of.—The chief predisposing causes appertain to a peculiarity of constitution, marked by a long neck, prominent shoulders, narrow chest, long slender fingers, and symptoms of constitutional irritability that is easily affected by external agents. The occasional causes are very numerous, as frequent and sudden changes of temperature, or imprudent exposure of the body to cold; the dust to which certain artificers are exposed, as needle-pointers, stone-cutters, millers, etc.; over-action in speaking, singing, or playing on a wind instrument; the irritation of various other diseases, as measles, small-pox, hooping-cough, asthma or syphilis; the sudden suppression of a cutaneous disease, or of any habitual discharge; and the irritation of a too rapid growth of the body.

The disease may also arise from the lodgment of any extraneous substance in the gullet, or in the windpipe; from profuse evacuations; and from continuing to suckle too long under a debilitated state.

Sir James Clark, physician to the Queen, enumerates, as the exciting causes of consumption, "long confinement in close, ill-ventilated rooms, whether nurseries, school-rooms, or manufactories"; he also says, "if an infant, born in perfect health, and of the healthiest parents, be kept in close rooms, in which free ventilation and cleanliness are neglected, a few months will often suffice to induce tuberculous cachexia"—the beginning of consumption. Persons engaged in confined close rooms, or workshops, are the chief sufferers from consumption: thus, of 233 tailors who died in one district in London in 1839, 123 died of diseases of the lungs, of whom ninety-two died of consumption. Of fifty-two milliners dying in the same year, thirty-three died from diseases of the lungs, of whom twenty-eight died from consumption. Dr. Guy reports that in a close printers' room he found seventeen men at work, of whom three had spitting of blood, two had affections of the lungs, and five had constant and severe colds. After reading these sad facts, who can deny that the chief cause of consumption is the respiration of bad air?

The great mass of consumptives die under thirty; and as the disease averages two years after a cough has been established, it clearly follows that the seeds of the disease are sown in the majority of cases during the "teens" of life, owing to the imprudence, thoughtlessness, and ignorance of the young.

Consumption, Mixture for.— See MIXTURES.

Consumption, Popular Errors Respecting.—"That consumption is catching," says Dr. J. B. Harrison, "is a popular opinion which, in this country at least, is not recognised by the profession. I believe such an opinion, however, to be

generally entertained in some parts of the Continent, especially in Spain, Portugal, and Italy. They even burn the clothes of those who have died of the disease, to prevent risk of contagion. It is true that husbands and wives will every now and then die consecutively of this complaint, but this is not more than we should have been led to expect *à priori*; for it not unfrequently must happen that consumptive families will intermarry. I think, therefore, the frequency of these cases of apparent contagion is not greater than what might be supposed likely to occur from mere coincidence in a disease which is so widely diffused. It must be admitted, also, that the anxiety and grief experienced by the survivor in case of the first death will do much to hasten the complaint, and thus the appearance of contagion will be heightened by the rapidity of the succession.

"Further, there is an idea prevalent that consumption is cured by asthma. I conceive this to be altogether erroneous. Asthmatic people are no doubt often considered by the public as consumptive, and it then becomes a matter of surprise that these people continue to live year after year. Sometimes these asthmatic people *do* die in the end consumptive. Supposing, indeed, that a few asthmatic people are found after death to have had tubercles in the lungs, it is scarcely logical to infer that the consumption would have been more rapidly developed if the asthma had not existed. Because those who have asthma in its most marked form do not necessarily become consumptive, is no proof that the asthma prevents consumption. I think the great bulk of consumptive people would be found free from gout; but are we, therefore, to try to induce gout in order to prevent consumption? My own idea of this opinion, about asthma curing consumption, is not only that it is an error, but that it is one calculated to do much mischief.

"There is also a notion that an ague cures consumption. This is equally ridiculous. There are, in fact, many cases of consumption in the aguish districts."

Consumption Produced by Close Bedroom Air.—Close bedroom air is considered by some recent and eminent medical authorities to be the most efficient of known causes of producing consumption and scrofula. A well-known French physician, who has devoted much attention to studies of this nature, says:—

"Invariably it will be found, on examination, that a truly scrofulous disease is caused by a vitiated air; and it is not always necessary that there should have been a prolonged stay in such an atmosphere. Often a few hours each day is sufficient, and it is thus that a person may live in a most healthy country, pass the greater part of each day in the open air, and yet become scrofulous, because of sleeping in a confined place, where the air is not renewed."

Consumption, Range of.—Considering the importance which Koch's invention of, and inoculation with, anti-tuberculous lymph, for the prevention and cure of consumption has given to the question of tuberculosis or consumption, some statistics concerning that disease deserve special attention. In Europe tuberculosis of the lungs is rare only in the north-western islands—Iceland, the Faroes, the Shetlands, etc. In Bavaria the death-rate from this cause is 3·14 per thousand per annum; it is lowest in Lower Bavaria, and highest in Franconia. The mortality in Baden is 2·78 per thousand. In Denmark and Holland we find a moderate figure; in Belgium, especially in the industrial districts, a high one. Italy has 2·45 per thousand, three in Lombardy, and less than 1·5 in Sicily, Calabria, and Abruzzo. In Turkey and Roumania the mortality is high, in Greece low. Cyprus is almost exempt. Switzerland has less than two per thousand (Bâle, 3·57; le Valais, 1·2). In Norway more people die of this disease in the south than in the north. North-Eastern Germany has about 2 per thousand; the Lower Rhine and the coast of the North Sea, from 3 to 6; Berlin, 3·8; Bochum, Crefeld, Gladbach, 5·8 to 8·8. England's mortality from this cause is less than Germany's,

even in the great cities; London's figure is 3 per thousand.

In North America the death-rate from the disease in question varies greatly according to altitude, industry, etc.; it is highest among the Irish, lowest among the German immigrants. The coast districts of Central America suffer severely. In South America the mountain districts of Peru, Bolivia, Venezuela, etc., are pretty free; not so the coasts and lowlands. South Africa and Egypt (except in cities) are mostly free; but the East and West Coasts of Africa suffer pretty severely. In Australia the disease is increasing with the immigration.

These figures show that temperature does not influence the frequency of tuberculosis of the lungs; it influences only its course: the hotter the country, the earlier the end. In fifteen cases in hot climates Dr. H. Weber found a duration of seven weeks to six months; in fifteen cases in temperate climates he found a duration of nine to one hundred and fifty-six months. Wetness of soil has a still greater influence, as in Ireland, where the natives are greatly subject to consumption. Drainage diminishes the frequency of tuberculosis; hence the comparative immunity of high-lying districts. Of all races, the negroes seem to be least able to resist this disease. Its frequency increases with density of population, a factor which has to be taken into account along with others in industrial districts.

Consumption, Symptoms of.—

It is of the very first importance that this disease should be diagnosed in the earliest stages, for it is then that certain of its forms may be treated with tolerable confidence of success, and all can be dealt with to most advantage. That form which promises most by timely treatment is the inflammatory form, especially that which comes on in a patient who has long been in depressed health, from whatever cause. It commonly begins with a slight cough, which, however, persists, and will not go away, and the patient gets gradually

thinner. The respiration indicates feebleness, being wavy in character, or even failing. Besides this, there are certain sounds only to be appreciated by a skilled ear. If with all this there is a bad family history, the case is one demanding prompt action. This may be taken with good hope of success. If the fever keeps high, the chances do not improve; if it gradually diminishes and totally disappears, the patient may be said to have regained his health.

Take, now, a case of tubercular consumption. It may arise from the former, or it may be developed from the products of some long-standing disease of other organs, or one lung may infect the other. This form is not so common as the other. Its origin is very insidious; but, having begun, it goes on. There is considerable uneasiness at night; the temperature is high; and there are troublesome night sweats. There is a persistent cough, and very likely pain in one side. The appetite is very capricious, and very likely there is diarrhoea. With such cases, too, a huskiness, or even loss of voice, is by no means uncommon. This rarely occurs in any other variety of consumption, and may be looked upon as proof positive of the existence of this form, if any consumption be present.

The earliest symptoms of consumption are very probably connected with digestion: the appetite becomes capricious; there are pains in the chest, with some cough, often dry and hacking, with a small quantity of frothy expectoration. There is debility, flushing of the face on the slightest exertion; at other times the countenance is pale, except there be a hectic patch of red in the middle of the cheek. The eyes look unusually white and pearly; there is some fever at night, and a tendency to night sweats. Very likely there is some spitting of blood. This occurs in a very considerable proportion of cases, and is often the earliest symptom calling for attention.

As the disease advances, emaciation advances, so that the joints become enlarged by shrinking of the limbs, and the fingers commonly become clubbed at their points.

The night sweats and diarrhoea are the great means of reducing the bodily strength and substance; but in some cases excessive expectoration aids materially in this untoward process. At the same time the capricious appetite and the imperfect digestion leave the bodily supply very deficient. During all this time the spirits of the patient are good.

A very troublesome complication often seen is fistula in the lower bowel, which, if not relieved, taxes the patient's strength sadly. On the other hand, there is always a risk that if an operation be attempted, the wound will not heal, and so the latter risk is worse than the first.

Usually, if the disease be not arrested, the patient dies of exhaustion; sometimes he suffocates or bleeds to death—consciousness continuing to the last. But this result is by no means necessary; and the dread of the disease as being universally and unerringly fatal, which was wont to prevail, has been shown to be without foundation. Undoubtedly, if a patient with a bad family history is seen for the first time when the disease is well advanced, we have little ground for hope. True, also, that the tubercular form of the disorder is less amenable to treatment than is the inflammatory. Yet, due care being exercised, there are few cases which cannot be benefited; a goodly number which can be completely cured, or, at all events, the lungs so healed that they may be enabled to live a good long life in moderate comfort and with considerable carefulness.

The following remarks of Abernethy are worth attending to. They are oddly expressed, and embrace only a limited view of the subject; but are, nevertheless, valuable. He says: "Can consumption be cured? Bless me! that's a question which a man who had lived in a dissecting room would laugh at. How many people do you examine who have lungs tubercular, which are otherwise sound. What is consumption? It is (ulcerated) tubercles of the lungs; then, if those tubercles were healed, and the lungs otherwise sound, the patient must get better."

Consumption, Treatment of.—

The first and greatest point of all is the selection of the condition under which the patient is to live. On the continent of Europe there may be found in different health resorts people who have all their lives had bad chests, but who, by wandering from health resort to health resort, according to the season of the year, are able to maintain life comfortably.

If such a thing is not possible, we must try next to select the most favourable conditions possible. The first great thing in selecting our abode is the avoidance of damp. It should be situated in a dry and porous soil. Such patients must take the greatest care of themselves; no risks must be run. They must live plainly, but their food must be nutritious. They must avoid excitement; but cheerful society is of the greatest possible value. They must not fatigue themselves; but daily exercise is incumbent. They must not be exposed to too great heat; but cold is even more to be dreaded. They must try to keep the skin open; but they must avoid perspiration. Hence baths must be regulated in temperature for the individual—tepid, cool, or cold, as the case may be. The bowels must be kept open; but if they are loose, the diarrhoea must be checked. Finally, such patients should on no account go without flannels, while the other clothing should be changed, if desirable, to suit the different periods of the day and year. At all times it must be warm, so as to avoid risks from cold.

The places best adapted for health resorts, for those who are the subjects of consumption, are situated along our south coast, or that of France. Torquay and South Devon are very good if the patient can stand their relaxing climate; if not, Ventnor, which is far drier. Hastings is intermediate between the two; while Penzance is milder and moister than any of the others. Brighton is more bracing; and certain districts on the Lancashire coast have also of late been tried with tolerably fair results.

If neither Ventnor, Hastings, nor Torquay will suit, the patient must go abroad,

and practically his choice must rest between Pau and the Riviera, that strip of coast with intervenes between the Maritime Alps and the sea. Madeira used to be the great resort, but has fallen into disrepute. It is, perhaps, best adapted for those cases where the throat, as well as the lungs, is affected. In summer, St. Moritz and Tarasp have become favoured resorts; but many other similar sites might be selected, if the accommodation be good and the food suitable.

For those in the very early stages of phthisis, nothing perhaps does so much good as a sea voyage to a mild climate—to the West Indies, for instance; though many may prefer the longer voyage to Australia or New Zealand. Often these do great good, but they must be undertaken early, or the result will be the reverse of favourable.

Change of climate in females is apt to produce derangement of the menstrual function. This should be seen to, as any excessive flow would be very weakening. This, moreover, has to be borne in mind that in consumption this function almost entirely ceases, and generally does so altogether.

Patients, the subjects of consumption, have often early in the disease a rooted objection to fat as an article of food. This is the more important as, of all substances, it is to them the most necessary. If, therefore, they refuse to take fat as food, we must endeavour to give it as medicine. The form of fat which is most easily digested is cod-liver oil. It is to be given to the patient cautiously. Cod-liver oil is food rather than medicine, and the best time for taking it is just after a meal. The fish-oil used in this way should be entirely devoid of colour; *every trace of colour is an impurity.*

Next to cod-liver oil as a remedy comes iron. This, too, is best dealt with as a food; that is to say, given along with the meals. The best preparation is the reduced iron, which can be taken in soup. If this is not attainable, the freshly prepared carbonate should be given. Pepsine, as procured from the pig's stomach, is exceedingly useful in enabling the food to be digested with ease and comfort, when otherwise it would only

pass into the intestines, there to putrefy and ferment, and so set up diarrhoea. Four or five grains may be taken for a dose just after a meat meal. If that do not suit, meat digested beforehand might be tried.

When cod-liver oil cannot be taken, other kinds of oil may be tried. Of these, the best are cream and salad oil. When no oil can be taken, rubbing it into the skin does good. Syrup of the iodide of iron may be given along with the oil, and often does good. Iodide of potassium seldom does, except the disease be syphilitic in its origin. If prescribed at all, it had better be given in decoction of bark. But of bark the best preparations are the compound tincture and the liquid extract, given in doses of a drachm or so three or four times a day. It is often well to combine some acid with the bark: the best is the dilute nitro-muriatic acid, in doses not exceeding twenty minims.

If the perspiration be very troublesome, it is customary to give dilute sulphuric acid; but any acid does good. On the other hand, it is very frequently good to give alkalies instead of acids. These, certainly, combined with bitters, very frequently strengthen the appetite and aid digestion. Liquor potassæ is commonly given in doses of 5, 10, or 20 minims, sometimes with bark, sometimes with gentian or other bitters.

Certain remedies called hypophosphites, and notably hypophosphite of soda, introduced by Dr. John Francis Churchill, an advocate of the cure of consumption by inhalation, have been highly extolled in the earlier stages of the disease. Counter-irritation is of most benefit where the pleura is concerned, and the patient cannot lie in certain positions on account of pain. Flying blisters are kept on only for a few hours; but the most convenient are Dr. Albespeyre's plasters, or Rigollot's mustard leaves. Of the complications to be dealt with, one or two yet remain to be noticed. First comes bleeding. When it comes on, absolute rest must be enjoyed, cold applied to the chest, ice taken internally, and gallic acid with sulphuric acid freely imbibed. Oil of turpentine is also of service, though perhaps indi-

rectly. Night sweats have been alluded to; mineral acids, if not otherwise forbidden, are best for them. Diarrhoea must be dealt with carefully. It must never, however, be allowed to weaken the patient; chalk, opium, and acid are the best remedies. If the throat be bad, nitrate of silver is the best application: For the cough, a little opium or belladonna may be given; but it is better treated on general principles. The latest cure for consumption or tuberculosis is the lymph discovered and introduced by Dr. Koch, of Berlin (*see KOCH'S LYMPH*); but as this is on its trial, and its effect in cases of consumption has yet to be ascertained, it is manifestly premature to express any opinion of it here. Moreover, the mere mention of this new mode of treatment is all that is necessary here, for it cannot be used in household practice, and patients should only be subjected to it at the hands of a duly qualified medical man who has had experience in its use.

The emotion of hope is known to influence the respiratory functions, and in the last stages of pulmonary disease the patient is often buoyed up with the certain expectation of recovery. "How frequently," says Sir H. Halford, "have I seen the face of the delicate female, in the last stages of pulmonary consumption, lighted up, and everything assume a bright and cheerful aspect about her! New schemes of happiness have been contemplated, new dresses prepared, and everything was brilliant in her prospects, whilst her parents lived under the greatest apprehension and solicitude, the physician seeing nothing but the inevitable fate for the poor victim whose distemper has deluded her."

Consumptive Patients, Localities Suitable for.—On this subject, Dr. Graham remarks:—"All consumptive persons require a mild and equable atmosphere, and the sooner this is gained, the greater will be the probability of success. Medical men, however, differ respecting the best place for phthisical patients to resort to; particular parts of Italy, Madeira, Lisbon and the

South of France have been much recommended by many, while others object to them. Among all the contrariety of opinion, it is certain that consumption is frequent in each of these climates; that in the latter stages, a change to either of them generally accelerates rather than retards a fatal termination; that the duration of the disease in Italy seldom exceeds three or four months; and that the accommodations in all the above places are universally bad. The physicians of Italy acknowledge that in a hundred deaths in that country there are twenty-five by pulmonary consumption. The distinguished M. Bayle, whose authority cannot be doubted, asserts that of five hundred who die in the Parisian hospitals, one hundred die of phthisis, and of the four hundred, at least fifty are complicated with that disease. Drs. Gourlay, Gordon, and Heineker, who all reside at Madeira, discourage us from sending patients thither; the first observing that whole families have, at times, been swept off there by consumption. Sir Alexander Crichton objects to the whole of Dauphiné, almost the whole of the South of France, and the North of Italy, and many other places in those quarters, as being under the influence of cold winds from the neighbouring mountains, and as destructive to foreigners labouring under phthisis. Dr. Southey thinks unfavourably of Malta, Sicily, and other islands in the Mediterranean; M. Portal has the same feeling with respect to the South of France, and Sir Charles Morgan in regard to Italy. Nearly the whole of these writers speak from personal observation, and, after considerable attention to the subject, the present author is entirely of their opinion; yet it must not be forgotten, that at the very beginning of the disease these climates are sometimes advisable and useful. Upon the whole, we are authorized to conclude that consumptive Englishmen will very rarely find a situation equal to Penzance, and never one that is superior to it. The South of Devon, also, has a mild climate very suitable to such persons; it is about a degree and a half or two degrees warmer than London; but

'Penzance,' says Dr. Young, 'may be fairly considered as having a temperature four degrees and a half higher than London, in the coldest months; and in equability of temperature also it retains its superiority over even Devonshire. It is well known that many persons far gone in consumption have perfectly recovered from a lengthened stay at Penzance; and it is much to be regretted that physicians do not more frequently send their phthisical patients thither, in preference to Sidmouth, Exmouth, or any other part of Devonshire.'

'In removing to a milder climate, it is a mistaken and prejudicial notion to suppose that the patients are to derive their great benefit from wintering there. They should remain both summer and winter, for they invariably gain the most sensible advantage during the former season; and a residence during the latter is often absolutely necessary to their existence.'

Contagion (*Lat. contagio*, infection by touch; from *con*, together; *tango*, I touch) is the term applied to the material, in consequence of which a healthy person touching a diseased one may have conveyed to him the disease with which the latter individual is affected. The word infection is applied to the substantial influence by which a malady is transmitted from one person to another, either with or without actual contact.

The type of infectious diseases is small-pox, and it is also, as is well known, a highly contagious complaint. Scarlet fever, hooping cough, measles, mumps, etc., are likewise both contagious and infectious, and make up the class of disorders popularly known as diseases which are "catching." Besides the complaints already mentioned as undoubtedly infectious, there are several others, such as typhus fever, as well as typhoid fever and diphtheria, which are strongly suspected to be, at least under certain unknown circumstances, capable of transmission in the same way from diseased to healthy persons, and it is, therefore, wise to take the same precautions against catch-

ing them as against the poisons by which the first-mentioned groups are probably disseminated.

The importance of learning how to avoid the contagion of these diseases is very great, and it is a duty we owe to society to acquaint ourselves with the subject. An examination of any table of statistics, giving the causes of death in a community, will show that contagious diseases form about the most serious of all enemies to health; and, in consulting such tables, we must always take into account that the number of non-fatal cases of each disease is at least ten times that of the fatal.

Numerous and violent are the controversies which have been waged, and are now carried on, in regard to the true nature of contagion; but, without entering into them, we will just say that by far the most probable doctrine is that set forth in the germ theory of disease, which is briefly as follows:—

This hypothesis, attributed by some to Pliny, and without doubt ably advocated by the celebrated Linnaeus more than a century ago, professes to account for the symptoms of the contagious diseases by attributing them to the more or less mechanical irritation of groups of microscopic plants, developing in the blood, the skin, and the vital organs of affected persons. The time of incubation (by which is meant the time between exposure to small-pox, for example, and the outbreak of the complaint) is supposed to correspond with the time required for the sprouting of the seeds of these minute plants within the body. The gradual increase in the severity of the symptoms is attributed to the progressive growth of millions of tiny vegetable organisms, whose periods of greatest luxuriance mark the height of the attack, and the death and destruction of which correspond to the decline of the disease. The contagiousness of the communicable maladies is accounted for, as you see, very beautifully by the existence of the immense number of almost inconceivably small seeds (truly the seeds of disease) constantly pro-

duced, given off by the sick patient, either alone or attached to some of the innumerable epithelial scales which are all the time being rubbed off, as dandruff, etc., from our bodies. The general absence of second attacks is admirably explained by the hypothesis that the parasitic fungus, on the first occasion, has exhausted all, or nearly all, of some peculiar unknown organic ingredient in our system, which is absolutely requisite for its support, according to the very same law which will entail, as every farmer knows, the failure of his wheat, if he plants it repeatedly in the same ground, and neglects to secure a due rotation of crops. Scientific inquiry—at present making such rapid strides—will soon, it is to be hoped, bring this matter out of the region of theory.

The well-known fact, that a person is not attacked more than once by any of these diseases, as the small-pox, measles, and the scarlet, typhus, and typhoid fevers, though a general, is not an absolute law without exceptions; but these are, however, of that rarity which is said to prove a rule. There are instances recorded, but mentioned as curiosities, by medical writers, of persons having had small-pox, and other contagious and infectious diseases, not only twice, but even more times. Sir Robert Christison, a famous professor of the University of Edinburgh, was so peculiarly liable to typhus fever, that he was forced to give up his attendance as a physician upon any patient affected by it; for he found, after a series of half a dozen or so attacks, that it was not possible for him to expose himself to the disease without getting it. He thus, although one of the most eminent and indefatigable physicians of the Edinburgh Infirmary, was, after many years of heroic martyrdom to the typhus fever, of which his peculiar sensibility had made him so often a victim, forced by his associates to yield to their remonstrances against his entering any ward of the hospital where were persons affected by this disease.

Every individual afflicted with small-pox, scarlet fever, or any other of the diseases

above mentioned, is, according to the germ theory, to be looked upon as a sort of hot-bed or forcing-house for the seeds or spores of that malady. From his or her body are continually given off in all directions, from the skin, the breath, the perspiration, and the other secretions, millions of spores, so minute that twenty thousand of them, placed end to end, would not measure an inch in length, and a group of them, the size of an ordinary grain of sand, might contain fifty millions. Each one of these infinitely minute seeds, if it were received into a human system under favourable circumstances, would rapidly reproduce itself, and, after a few days or weeks, corresponding, as already mentioned, to the period of incubation, give rise to a new case of disease; again, a new hotbed for other unprotected persons.

Now these spores, just like the seeds of large noxious weeds which, when allowed to gain a foothold in our fields and gardens, propagate themselves with such immense rapidity, have no power to move of their own accord, and can only develop if they meet with air, moisture, and congenial soil suited to their peculiar requirements. That is to say, if the contagion of small-pox is not wafted by the air, so as to reach any unvaccinated person before it loses its vitality—if, in other words, the seeds of this loathsome disease do not fall upon good ground, then, and then only, no harm is done to mankind.

Contagion, Error Respecting.

—One of the most common and most mischievous popular errors which a general acceptance of the germ theory will necessarily subvert, is the belief that small-pox and other contagious maladies often arise without previous exposure to the seeds of disease. This doctrine, frequently advanced in private life as an excuse for neglect of proper care and precaution in regard to children, etc., and occasionally sustained by public authorities as an apology for violation of quarantine and other sanitary regulations, is exceedingly

pernicious. We firmly believe that, in our own days, at least, every new case of the contagious maladies already enumerated is the immediate offspring of a preceding case, and the direct result of exposure of an unprotected human being to the chance of having the seeds, or spores, of disease implanted in his system—an exposure which it only required sufficient knowledge, sufficient foresight, and sufficient care to avoid.

No doubt many of our readers will feel inclined to say that they are personally acquainted with instances where diseases, commonly recognised as contagious, have arisen without any known exposure to other patients sick with the same malady, from whom they could have caught the complaint. We admit that many such examples do occur, but contend that, with our present means of detecting the poison of such affections, which is invisible to the ordinary powers of the best microscopes, such must necessarily be the case. When, however, circumstances enable us to be sure that not even particles so minute as those we have described as the germs of disease can be disseminated, we find there occur no such outbreaks of contagious maladies whilst the conditions remain unaltered.

This truth is admirably illustrated in the epidemic of measles, which appeared in the Faroe Islands—an isolated group in the North Sea. For sixty-five years the inhabitants of these islands had been free from measles, when, on the 1st of April, 1846, a workman from Copenhagen, who had arrived three days before, fell ill with this disease. His two most intimate friends were next attacked, and from that time the malady was traced, by Dr. Pannum, the Danish commissioner, from hamlet to hamlet, and from island to island, until 6,000 out of a total population of 7,782 had been affected by it. Age brought no safety from the contagion, though the disease was found to spare all who in their childhood had suffered from it at the time of the previous epidemic, more than sixty years before. In the Southern States of North America,

quarantine, when *mercilessly* enforced, has always succeeded in keeping out yellow fever.

Contagion, Legal Means for Prevention of.—Legal means for preventing the spread of infectious or catching diseases are the following:—

1. Scarlet fever, small-pox, typhus, typhoid and relapsing fevers, and measles are catching, or infectious disorders.

2. By the Sanitary Act of 1866, a penalty of £5 is inflicted on any person who wilfully or negligently is the means of spreading infectious and contagious diseases among his friends or neighbours.

3. It is illegal to use any public cab for the conveyance of a patient to a hospital or anywhere else without telling the driver that it is a case of infectious disease.

4. The driver of a cab may refuse to take any such person unless he be paid a sum of money sufficient to defray the expenses of disinfecting his cab.

5. Any cabman taking another fare, after conveying an infected person, without previously disinfecting his cab, is liable to a penalty of £5.

6. It is illegal for an infected person to go or for any person to take or send any one suffering from an infectious disease to any public place, such as the waiting-room of a hospital or dispensary, or to a school, or to a church or chapel, or to a theatre, or omnibus, or other public carriage, so as to endanger any other persons, whether adults or children.

7. It is also illegal for any person to give, lend, sell, or move to another place, or expose any bedding, clothing, rags, or other things which may have become infected, and are liable to convey any contagious diseases to another person, unless such things have been previously disinfected.

8. It is also illegal to let any house, room, or part of a house, in which any person has been ill with any dangerous infectious disease, until it and all articles in it have been properly disinfected. The same law also applies to public-houses, hotels, and

lodging-houses. The penalty for disobedience in these cases is £20.

Contagion of Small-Pox.—See SMALL-POX, CONTAGION OF.

Contagion, Practical Rules for Prevention of.—When any member of a family is attacked with small-pox, scarlet fever, diphtheria, or other contagious disease, the malady may generally be prevented from extending by attention to the following rules, which have been compiled with a view to practical utility:—

Have the patient placed in one of the upper rooms of the house, the farthest removed from the rest of the family, where the best ventilation and isolation are to be had. He should be under the sole charge of a nurse who is protected by a previous attack of the disease. The apartment should be at once cleared of all curtains, carpets, woollen goods, and unnecessary furniture. To secure the utmost cleanliness, provide a basin partly filled with chloride of lime or strong carbolic acid solution (a teaspoonful of acid to a half-pint of water) for the patient to spit in. Change the clothing and bedding of the patient as often as needful, but never let the cast-off articles be carried dry through the house. A large tub, containing carbolic acid solution (four fluid ounces of carbolic acid to each gallon of water) should always stand in the room for the reception of bed or body linen immediately after its being removed from contact with the patient. The nurse should wear in the chamber a loose gown and tight-fitting cap, and the hands should be washed, before going out, with the carbolic acid water. Pocket-handkerchiefs and napkins should not be used, but in their stead pieces of rag, which can be at once burned. Glasses, cups, dishes, etc., must be scrupulously cleaned in the carbolic acid solution, or in boiling water, before they are carried away from the room.

The discharges from the bowels and kidneys are to be received *on their very*

issue from the body into vessels containing some disinfectant, such as a solution of two pounds of green vitriol (sulphate of iron) in a gallon of water, or the carbolic solution, and immediately removed. A sheet, kept moistened with carbolic acid solution (double strength, or half a pint to the gallon) should be hung over the door outside, or beyond in the passage way, for the purpose of catching any germs of the disease which might otherwise escape.

Boiling is the surest way of disinfecting contaminated clothing; or it may be baked in an oven heated to about 240° Fahrenheit. After the disease is over, the patient should be kept isolated for ten days after all the scabs fall off in small-pox, or after desquamation (that is, "peeling" of the skin) is complete in scarlet fever; for the last week of his seclusion, daily baths, each containing one ounce of strong carbolic acid, should be given, and every square inch of the body must thus be carefully disinfected, especially the scalp, as the disease poison is apt to linger among the dandruff at the roots of the hair.

To purify the apartment, wash the furniture, woodwork, floor and walls (scraping off the paper) with the carbolic acid solution and soap. Then shut up tightly, and burn in it a pound of sulphur for every hundred cubic feet of space it contains, and allow the fumes to remain in the closed room for twenty-four hours. Lastly, open doors and windows so as to ventilate freely for a week, at the end of which time disinfection may generally be considered complete.

Contagious Diseases, Propagation of.—Contagious diseases are sometimes conveyed to innocent persons, especially children, by their lips having touched drinking-cups, gum-nipples, whistles, etc., which have been contaminated by the mouths or hands of persons infected with them, so that ladies, parents, and nurses cannot be too careful to guard against danger of this kind.

As we have unfortunately no such safe-

guard as vaccination against the other contagious diseases, such as scarlet fever, measles, etc., precaution against entering the sphere of their influence becomes doubly important, especially during epidemics of unusual fatality, or at times when our systems are enfeebled in any way by other maladies or unfavourable conditions. These diseases are very apt to be propagated among school children by the return of scholars recovering from measles or diphtheria, for example, before the poison has entirely passed off from their bodies, and without proper purification of their clothing: a pernicious practice, which should also be legislated against, but which can only be fully abolished by the action of enlightened public opinion in regard to the injustice and criminality of such acts.

No individual who has suffered from measles or diphtheria (which may be so mild as to pass for slight sore throat) can safely associate with others in less than two weeks from the date of complete recovery, and a period of from four to six weeks should elapse after an attack of scarlet fever before contact is allowed with children who have not been protected by a previous attack. Clothing, especially woollen fabrics, if not purified by thorough ventilation and disinfection, has been known to convey scarlet fever one, two, or even three years after it was impregnated with the contagion of this disease.

With such knowledge of the laws of propagation of the infectious maladies, it is obvious that the study of disinfection, or the destruction of the contagious material, be it vegetable, animal, or mineral, becomes of the gravest importance. Many persons—including, we are sorry to say, not a few physicians—seem to think that if they make an article of dress, a room, or a hospital smell badly of chloride of lime or carbolic acid, they have accomplished disinfection; but such is often by no means the case. From a series of very carefully conducted experiments, it has been lately concluded that no sewer or other virulent liquid can be regarded as surely and entirely disinfected

by sulphurous acid, unless enough of the gas from burning sulphur is absorbed by it to render it permanently and strongly acid to litmus paper. Also, that no similar virulent fluid can be considered disinfected by carbolic acid unless it contains two per cent., or about one ounce, of the pure acid in every three pints of liquid. According to the same authority, aerial disinfection, as commonly practised with carbolic acid or chloride of lime, is useless or positively objectionable.

Continued Fever.—See FEVER, CHARACTERISTICS OF.

Convalescence (*Lat. con*, intensive; *valesco*, I grow strong).—The period of active disease being now at an end, the patient passes into that state which is called convalescence, during which the powers of nature are exerted towards repairing the waste of structure that has occurred during disease. Up to this time the efforts of nature have been directed towards enabling the body to combat successfully the disease that threatened to overwhelm it, and now that this has been achieved and the combative part is over, her energies are called into play for another purpose. The frame that has been wasted by disease requires to be built up again, the worn-out frame requires to be supplied with fresh power to fit it for its accustomed duties, and the vital energies expended during disease require to be restored.

During convalescence the greatest care is necessary, as relapses may occur, and the disease end fatally, or it may assume a chronic form; hence the necessity there is, when active disease is over, of those who have the management of the sick attending in every particular to the rules laid down by the medical attendant, and avoiding everything that would be likely to exert a hurtful influence upon the patient's recovery.

Convalescence, Action of Friends in.—It is in convalescence that

the injudiciousness of friends begins to manifest itself, and unless firmness be exercised on the part of those in attendance, the patient may suffer through their mistaken kindness. Hitherto a barrier has prohibited their entrance into the sick-room; but, this being removed, they now enter, and fresh dangers arise to the patient. In the case of children, especially, there arises the danger that sweetmeats and pastry-stuffs may be thus brought within their reach, and, being eaten, a relapse may be caused. Both in hospitals and private homes this is constantly met with; and, notwithstanding the vigilance which obtains in the former, patients receive from their friends, and consume stealthily, what in many instances does them a positive injury. There is at this time call for increased vigilance on the part of those who wait upon the sick, and for increased efforts to see that the patient is placed under the influence of those conditions which will operate most beneficially upon him, and be most helpful in recovery.

Convalescence, Amusement in.

—When a patient is convalescing, great ingenuity will be needed to vary the monotony; a relapse may sometimes come from utter weariness and want of interest in life. Bring flowers, illustrated papers, and sensible friends to the room. Give all the fresh air that you can. Wrap up the patient and wheel him in an easy chair, or on a sofa, into another room, or open the window when the sun shines fully on it, and, putting extra wraps round him, let him sit there awhile. Fresh air before a meal will often secure a good appetite. Change the arrangement of the furniture. If a picture, or any other ornamental object, has stood long within the patient's sight, put something else in its place. But in all these efforts at variety, do not fatigue the patient with too many things to see and do in one day.

During convalescence, if the patient is at all intellectually inclined, much pleasure may be given him by reading to him, or by

supplying him with literature of an interesting character. If he is read to, it must not be overdone. It should not be continued so as fatigue the patient, and the manner of reading must be slow and deliberate.

Convalescence, Appetite in.—

One of the most frequent signs of returning health is the return of the patient's appetite. While the disease was at its height, he had no desire for food, and perhaps only took it with an effort; but now his appetite is returned, it seems as if his craving for food can scarcely be satisfied, and it is at this time, on the return of the patient's ability to eat, that the greatest caution requires to be exercised on the part of attendants and friends. The patient's desire for food should never be fully satisfied. If attention is not paid to this, the enfeebled stomach may have too much work thrown upon it suddenly, and, being unable to accomplish the work thus given it to do, indigestion may result, and the patient in consequence suffer a relapse.

Convalescence, Attention Necessary in.—

A very common error is made by supposing that when the patient has become convalescent the work of the attendants and friends is almost at an end; but how different in reality is the true condition of things! Just because the visits of the medical attendant are less frequent, more devolves upon the nurse and the friends; and whereas formerly they were able to receive daily instructions as to what they should do, they are now thrown much more upon themselves.

The time which the patient must remain in bed varies in individual cases, and can only be satisfactorily determined by the medical attendant. When a patient gets out of bed for the first time after a severe illness, he is generally allowed up only for a short time, and the effect produced upon him should be carefully watched, as it will best show whether or not he is able to leave bed with impunity. Should the patient, instead of appearing better for his first

short sit up, seem greatly fatigued, and, instead of sleeping soundly appear restless and disturbed, he had better be allowed to remain in bed a few days longer, after which he should be again tried, the same precautions as formerly being taken, and the effect once more closely watched.

Convalescence, Change of Air in.—Of all the agencies that operate beneficially and serve to restore the patient to health and strength again, 'change of air is perhaps the most potent. The patient who has remained for weeks in very much the same state, getting neither better nor worse, will often wonderfully improve after a few days spent in the country or at the seaside. The inhaling of pure air, and the effect on the mind of new scenery and fresh objects of interest are marvellous.

Convulsions (*Lat.* convulsus, violently shaken; from *con*, intensive; *vello*, I pull or pluck).—Convulsions may be said to mean violent and involuntary contractions of the muscles of certain parts of the body or of the whole of it, lasting for a longer or a shorter time, and very frequently returning in paroxysms. They may last a considerable length of time, without relaxation, and the term tonic is applied to them. The disease called lock-jaw, or tetanus, is an example of this. Common cramp is an affection of the same kind, but of more limited duration, and affecting only a small part of the body. If the spasms alternate with relaxations, they are described as *clonic*. Such spasms or convulsions as are associated with complete insensibility constitute an epileptic or epileptiform seizure. Salaam, or nodding convulsions, are very rare forms of the malady, peculiar to children.

Convulsions, Causes of.—The causes of convulsions are manifold, but it would seem as if there is a certain amount of evidence to support the notion that all act by suddenly depriving the motive part of the brain of a due supply of blood. This arrest of blood-flow may be brought about

in many ways, by plugging of the vessels, by powerful contraction of their muscular coats, etc. Sometimes poisonous matters in the blood, as in the condition known as uræmia, give rise to convulsions, especially in pregnant women. In children, irritation in a remote part of the body may be reflected in the brain and cause convulsions. Such is the explanation of convulsions from teething, worms, etc.

Convulsions, Infantile.—When called to a case of infantile convulsions, the remedies to be immediately resorted to are few indeed. The warm bath is the only one, which can with propriety be recommended in all cases. When a sufficient quantity of hot water is not at hand, as soon as a small quantity can be procured, the child may be wrapped in a blanket wrung out of this, and covered with another dry blanket, till the bath is prepared. The heat of the wet blanket must be somewhat under that which can be borne by the back of the hand with comfort. When the bath is ready, immerse the child in it at a temperature of 93° to 100°, and let him remain in it half an hour, if he does not soon faint away.

A great many children die in convulsions, the consequence of excessive feeding and improper confinement within doors; and it will be well for mothers whose infants are subject to convulsive fits to be attentive to the quantity and quality of their food, and to their having sufficient exercise. "I knew," says Dr. Graham, "a lady of rank, who had lost as many as three or four infants (it may be more) in this way, and from this cause alone. The parents were both wealthy, and the children were all full-grown, strong and healthy at the birth, and appeared so for some months after; but they invariably died at about the age of twelve or sixteen months, evidently from improper treatment, though the too fond mother could never conceive the cause. The nurse and mother joined in stuffing them throughout the day; and, thinking they would perish if left without food through the night, it was a regular practice to take

them up and feed them four times during that period !”

Convulsions, Treatment of.—

In dealing with convulsions in adults, perhaps the best plan is to wait quietly till the convulsion is over, and then try to prevent its recurrence. The patient should never be held or further controlled than is necessary to prevent him from hurting himself. His dress should be loosened, plenty of fresh air allowed to circulate around him, and none save those engaged in looking after him should be allowed to come near him. As he begins to revive, a little cold water to swallow may do good, but as soon as possible he ought to be got to bed and undressed—if not previously so—and left to himself. Very likely he will fall into a quiet slumber. Should he not recover consciousness, but pass from convulsions to coma, as it is called, very probably the cause of the attack has been the rupture of a vessel and the effusion of blood into the brain substance.

Cookery a Surprise to Savages.

—A savage suddenly introduced among civilized people is surprised by nothing so much as their complicated method of satisfying hunger and thirst. He, plucking the mussel from the rock, shooting the bird in the air, or piercing the wild beast in the wood with his ever-ready arrow or spear, as chance may offer, supplies his wants with hardly more deliberation than the animal on which he preys. Tearing the still quivering flesh with tooth and nail, he gorges himself with it without regard to condition, time, place, or order. His appetite rather waits upon the food than the food upon his appetite, and he feeds when, how, and wherever he can. No wonder, then, that the savage, when he is first brought to contemplate the dinner of civilization, is struck with astonishment; and he may well be, for it is a marvel of complicated formality.

Cooking, Advantages of.—Cooking makes our food more attractive to the senses. Not only the appetite, but the eye

and the sense of smell are gratified by the processes of baking and roasting and stewing, and thus the food becomes more longed for, and, consequently, more gratifying than it possibly could be in a raw state. The process of cooking develops the *osmazome*, on which the flavour of food so much depends.

Another advantage of cooking is that it is attended or preceded by processes of cleaning, by which much in food that is repulsive and useless is cast aside. Fish and animals are usually dressed before they go to the gridiron or frying pan, and it is by this process of dressing that roast meats and fish are made fit food for refined humanity. Similarly, but to a less degree, with fruit and vegetables, nearly all of which need more or less of lopping off and scraping and cleaning before they are put into the oven or stewpan.

Cooking also makes food more digestible. Boiling, stewing, and roasting make flesh and fish softer and more juicy, and, consequently, they are more easily assimilated. The abstract nutritive value of food is not necessarily increased with increase of its digestibility; but, on the contrary, is sometimes diminished. The process of boiling, especially, reduces very materially the actual nutritive value of meats.

The combinations made in the processes of cookery enhance the attractiveness and, consequently, the value of natural food.

Cooking also destroys the parasites with which some meats are infested.

“Our food must be done,” says Dr. Kitchiner, “either by the cook or by our stomachs, before digestion can take place. Surely, then, no one in his senses would be so wanting in consideration of the comfort of his stomach as to give it the needless trouble of cooking and digesting too, and waste its valuable energies in work which a spit or a stewpan can do better.”

Cooking, Chief Modes of.—Cooking includes chiefly the following modes of dressing meat: roasting, broiling, boiling, stewing, frying, and baking, for particulars of which see under each term as given here.

Cooking Fish.—The mode of cooking fish is of some importance; frying them in oil or lard is an objectionable process. In general the process of boiling is best adapted to render them wholesome. Stewed fish, with all the usual additions of glutinous and stimulant materials, are extremely injurious to dyspeptics. Most kinds of dried and salted fish are rendered more palatable and wholesome by being soaked for some hours in cold water. Those fish which are the least oily and fat are the most wholesome; but their highly nitrogenous character demands the abundant use of starchy food, in order that a due proportion of heat-givers may be consumed along with the flesh-formers they contain. A dry, woolly, or tough texture in the muscular fibre of fish is an indication of indigestibility. The fat of fish is still more insoluble and indigestible than that of other animals, and readily turns rancid. Acid sauces and pickles, calculated to resist putrefaction, render fish somewhat better and more wholesome for the stomach, while butter has a tendency to prevent digestion, and to promote the corruption of its flesh. On the contrary, spice and salt, used in moderate quantities, stimulate the fibres of the stomach and facilitate the digestive process. One of the best sauces that can be used with fish is lemon-juice. Some of the compound sauces in vogue are of very doubtful composition and purity.

Cooking Fruit in Copper Vessels.—Cooking fruit in brass or copper kettles, although less common than formerly, before its dangers were properly understood, is still sometimes practised, as is also the making of pickles in such metallic vessels, for the purpose of giving them a fine green colour. This is, of course, due to the beautiful but deadly acetate of copper, or verdigris, formed by the action of vinegar upon copper or brass. Preserved green peas have sometimes been found to owe their fine fresh colour to a salt of copper, and should then be eaten with caution or not at all.

Cool Sponge Baths.—Cool (not

ice-cold) sponge baths are valuable tonics, and may often be advantageously used in delicate states of health. The shock to the system is much less than with the plunge bath, and the consequent reaction less intense; but the rule for judging of their beneficial effect is precisely the same. It need not be supposed that elaborate bathing arrangements are necessary. The child or man needs simply a basin of water, a rough wash cloth, a rubber cloth to stand on, soap and towels. Let him then take off all his clothes, and briskly rub himself from head to foot with soap and water, and then with the dry towel. The back can always be reached with a small wet towel thrown over the shoulders and rubbed back and forth.

Copper, Poisoning by.—Copper in its metallic state is not poisonous, but some of its combinations are so; for instance, verdigris, which is a salt produced by the combination of vinegar with copper; and also the salt so well known in commerce under the name of blue vitriol, which is a sulphate of copper, or a combination of copper with the sulphuric acid, or oil of vitriol. The circumstances under which poisoning by copper generally takes place is by the introduction of artificial verdigris, or acetate of copper, into the stomach with our food; this verdigris being produced in copper vessels not well tinned, or not at all tinned, when such are left with acid, or with greasy matter in contact, and are afterwards used in cooking without attention to cleanliness. The same substance is occasionally formed and taken into the stomach by the equally culpable negligence of leaving soups or stews in coppers, or copper saucepans, to cool or to be cooked up again for another occasion. Another cause of accident from copper is the practice adopted by many of putting copper coins into pickles and preserves for the purpose of improving or heightening their green colour.

Copper, Sulphate of, or Blue Vitriol.—Blue vitriol or sulphate of copper is another preparation of copper, which acts

as a poison in moderate doses. In the small dose of one or two grains it operates as an emetic; when taken in larger doses, it produces the whole train of symptoms described under Poisoning by Copper, and requires the same treatment.

Copper, Symptoms of Poisoning by.—The symptoms produced by verdigris, if the quantity be small, are pains in the stomach with sickness and vomiting, the matter thus ejected being acrid, often of a coppery taste, and sometimes of a greenish or bluish colour. If the quantity be larger, or the person who partakes of the food thus prepared be of a naturally feeble constitution, or previously disposed to bowel affections, the above symptoms are much more violent in degree, the stools become bloody, spasms or cramps come on with cold, clammy sweats, convulsions and death.

Copper, Test of Presence of.—The test of the presence of verdigris in any fluid is the addition of a small quantity of liquid ammonia or of sal volatile, which immediately occasions a pale azure-coloured precipitate, which is re-dissolved by an excess of the ammonia, forming then a deep violet-blue transparent fluid. An easy test of the presence of blue vitriol is a piece of polished iron. Pour boiling water on the suspected matter, and filter it through paper; suspend a key or the blade of a knife in the filtered fluid, and, if blue vitriol be present, the iron will assume a coppery hue, and the fluid a greenish tint.

Copper, Treatment of Poisoning by.—The treatment for poisoning by copper in any form in which it can be taken into the system consists in giving the whites of eggs, as recommended after taking corrosive sublimate; and in promoting vomiting by introducing the finger down the throat, or by any ordinary emetic, if the symptoms arise soon after the poison has been taken, and by the use of the stomach pump as soon as it can be procured. Should the symptoms arise many hours after the

M. D.

suspected food has been taken, the white of eggs should still be given; cathartic, and then anodyne glysters, should be administered; and, lastly, the treatment for ordinary inflammation should be adopted, as leeching, fomenting, etc.

Copper Vessels, Cooking in.—It is most important that copper vessels should be kept scrupulously clean and dry. If they are allowed to remain wet or dirty, and, above all, greasy, a poisonous green rust, somewhat resembling verdigris, forms on the surface, and this imparts a poisonous character to whatever is prepared in them. They should be examined daily, and as soon as they exhibit a red appearance they should be re-tinned.

Copper Vessels, Cooking Fruit in.—See COOKING FRUIT IN COPPER VESSELS.

Corbett on Ventilation.—See VENTILATION, CORBETT ON.

Cordials (*Lat. cor, cordis*, the heart, in allusion to the supposed strengthening of the heart and human frame by their assumed invigorating principles).—However cordials may be modified, as to taste, by the sugar, spices, and essential oils which they contain, they all agree in possessing the deadly properties of the spirit which forms their basis. Some of these compounds contain another poisonous principle: namely, prussic acid, derived from bitter almonds and other kernels with which they are flavoured. Though instances have occurred of serious consequences having been produced by such cordials, the quantity of prussic acid employed is very seldom sufficiently great for its pernicious tendency to deserve comparison with that of the spirit.

Corium, Cutis Vera, or Dermo (*Lat. corium*, skin; *cutis*, skin; *vera*, true; *Gr. derma*, skin).—These names are given to the inner or deeper portion of the skin, which is also known as the true skin. It forms the largest mass of the skin, is com-

posed of firm and elastic connective tissue-fibres, which interlace so as to form a structure resembling felt, which is extremely tough, and yet so elastic as to yield to every movement, and to regain its former position and state with a perfection which could not be excelled.

At its under surface the meshes of the corium become larger and larger until we reach what is called the *subcutaneous cellular tissue*, which is very loose, and connects the skin with the parts below; and it is this which permits so much motion. This subcutaneous cellular tissue in some parts of the body is filled with fat, and forms the *panniculus adiposus*; and it is here that most of the fat in corpulence is deposited. It is this tissue also which becomes filled with water in dropsy. The outer surface of the corium is not even and smooth, but is thrown into multitudes of elevations called *papillæ*, and this portion takes the name of *pars papillaris*, or papillary layer of the skin. These minute elevations, or papillæ, are exceedingly numerous, in some parts of the body there being as many as four hundred on every square line of the surface, that is, on each space a twelfth of an inch square.

Cornaro, Case of.—See PLEASURES OF OLD AGE.

Cornea.—See EYE, GLOBE OF.

Cornea, Diseases of the (*Lat. corneus, horny; from cornu, horn*).—Diseases of the cornea, or horny transparent membrane in front of the eye, may destroy or impair its transparency, or the ulcers that are frequently formed may extend through its substance, allow the aqueous humour to escape, and involve the iris. Even when such ulcers heal most favourably, they leave a permanent scar in the form of a white speck. Inflammation of the cornea is usually painful, and accompanied with distressing sensitiveness to light. It occurs most frequently in persons whose health has been subjected to some depressing cause, or in children who have inherited a

delicate constitution. Many of the latter are subject to repeated attacks for years, but the tendency to their recurrence generally disappears before adult life; and if care be taken to prevent each attack from leaving a permanent mark, the eyes may finally remain sound and strong.

A large white opacity of the cornea is often mistaken for cataract; and, not many years ago, when a knowledge of diseases of the eye was not so general as now, this mistake was sometimes made by physicians, and such patients were sent hundreds of miles to have the cataract removed.

Corned Meat.—Corned and salted meats, so called corned because they are hardened by the process of salting, should be used rarely, only to give that variety of diet so demanded by the caprices of taste, and, in fact, by the requirements of health. They cannot, however, compose the exclusive diet of man for any length of time; for the salting process deprives flesh of much of its nutritious quality, and of certain constituents which seem essential to the blood. A continued diet of salt meat gives rise, as is well known, to scurvy, unless a free supply of fresh vegetables is combined with its use. Before cooking salted meat, it should be first well soaked in fresh water, and then boiled like any other.

Corn-Flour.—This is a preparation of starch, and so called because it was originally prepared from maize or Indian corn. The term has also been applied to starch prepared from rice and other grains. In the preparation of the maize and other grains, in order to make corn-flour, the husk and gluten of the seed are separated by grinding and the action of water.

It cannot be too forcibly impressed on the public that corn-flour is not food, but pure starch from which the whole of the flesh-forming constituents have been abstracted, thereby rendering it valueless as substantial food upon which flesh, bone, and strength are to be supported. Instances of children terribly emaciated from being crammed with

corn-flour, by persons ignorant of its true nature, frequently come under the physician's notice. Corn-flour should always be given with milk.

Corns (*Lat. cornu, horn*).—Corns, or clavi, are small growths of the outer, or horny, layer of the skin, which give pain by pressure upon the soft parts beneath; they may be said to be always due to tight or improperly fitting shoes. The true remedy is, therefore, to have a proper shoe. Much may be done both to prevent their appearance and to ease them when present, and to assist in their removal by having several pairs of shoes, and wearing them on alternate days. Each presses a little differently, and so diminishes the chance of injuring the particular part.

Most of the corn remedies contain substances which soften the epidermis, such as potash, acetic acid, etc., in combination with various resins and pitch. They are good in their way, though incapable of curing the trouble, if the same cause, a bad shoe, be persisted in. Nor can permanent results be obtained, or expected, from operations by "chiroprudists." They remove the offending mass mechanically, but it will regrow unless the foot covering be changed. Soft corns may be greatly benefited by daily washings with soap and water, and the occasional use of spirits of camphor to harden the skin, together with the wearing of a bit of cotton wool saturated with oil or glycerine between the toes. The juice of the herb celandine, which will remove warts, will also by continued applications remove corns also. A preparation of celandine for this purpose is sold by chemists generally.

Corroborants.—*See* TONICS.

Corrosive Sublimate, Poisoning by (*Lat. corrosivus, eating away; from con, intensive; rodo, I gnaw; sublimatus, raised on high or highly refined; from sublimo, I raise on high*).—The symptoms after taking corrosive sublimate, which is a preparation of mercury, or, in other words,

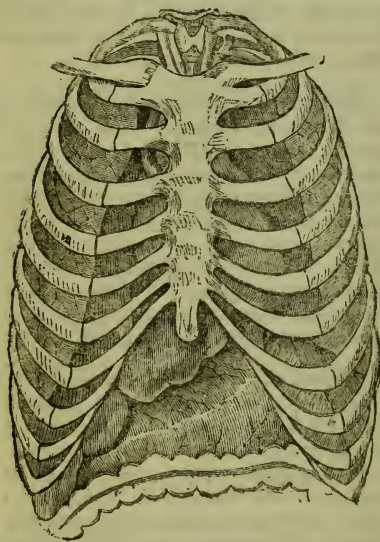
bi-chloride of mercury, are precisely similar to those from arsenic (*which see*). The antidote is white of egg. Mix the whites of twelve eggs with a quart of water, beat them up, and give a wineglassful every two or three minutes, so as to favour vomiting. If eggs are not at hand, give milk, or sugar and water in large quantities, till the eggs be procured. If vomiting has not yet been freely produced by the poison, or by the egg and water or other drinks taken into the stomach, the back of the fauces, or throat, should be irritated by the finger or by a feather, and an emetic of any kind that is at hand should be given immediately.

Corrosive Sublimate, Presence of, How to Detect.—The means of detecting corrosive sublimate will be understood by the following characters:—When exposed to heat in its solid form, it is entirely evaporated. It is soluble in water, and still more so in spirits; and when a solution of it is added to a solution of ammonia, it is precipitated white, when to a solution of potash, yellow, and when to iodide of potassium, a bright scarlet colour.

Corset or Stays (*Fr. corps; Lat. corpus, body*).—The corset is an article of dress for compressing, under the pretext of supporting, the chest and the waist. It seems a remnant of the old practice of enveloping the whole frame in swaddling bands—a practice which has been generally discarded in rearing male children, but which still lingers as a part of the attire of female children, in defiance of nature, reason, and experience. The advantages arising from its use are trifling; the disadvantages manifold and serious.

Nature has formed the chest (in which are lodged the lungs for respiration and the heart for circulation, two out of three of the vital functions) in the shape of a truncated cone, the base of which is capable of being alternately widened and contracted during inspiration and expiration. The wonderful and perfect mechanism for carrying on respiration cannot come into full play if any

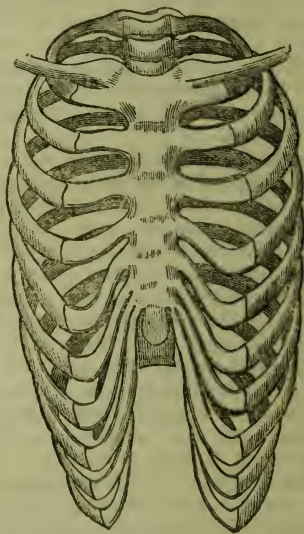
compression be applied to the lower part of the chest, which is, however, the part commonly selected, from yielding most easily, to endure the hurtful restraint of tight-lacing. The chest never being allowed to expand to the extent which is necessary, the defect in each respiration is attempted to be compensated for by their greater frequency; and thus a hurried circulation is produced. The heart is also hindered in its action, and an imperfectly aerated blood is circulated by



RIBS IN NATURAL POSITION.

it, by which nutrition is inadequately accomplished; unhealthy secretions are likewise formed out of this vitiated blood, and prove a further source of disease. The muscles of the chest, spine, and abdomen, being deprived of their proper exercise, become attenuated and feeble, and incapable of giving due support, whence result distortions of the spine and chest, and much of that constipation which so frequently afflicts females. The viscera of the abdomen, especially the liver, suffer greatly, both by displacement—being forced downwards—and by being actu-

ally indented by the edges of the compressed ribs. "In examining," says Dr. Hodgkin, whose connection with Guy's Hospital gave him extensive opportunities of observation, "the bodies of the dead, I have frequently found the lower ribs of females greatly compressed and deformed. I have repeatedly seen the liver greatly misshapened by the unnatural pressure to which it had been subjected, and the diaphragm, or midriff, very much displaced."



RIBS AS COMMONLY DEFORMED.

Coryza.—See COLD IN THE HEAD.

Cottage Filter (*Fr.* filtre; *Ital.* feltro, filter and felt also, the first attempt at filtering or straining having been made through felted cloth).—One of the simplest and cheapest pieces of apparatus for purifying water is Dr. Parkes' cottage filter, which is shown in the accompanying engraving, and is thus prepared:—Get a common earthenware flower-pot, and cover the hole with a bit of zinc-wire gauze, or of clean-washed flannel, which requires changing

from time to time; then put into the pot about three inches of gravel, and above that the same depth of white sand washed very clean. Four inches of animal charcoal (covered with a thin stratum of gravel, or with a piece of slate, to keep it in place)



FILTER.

constitute the last layer; and the water should be poured in on the top, and be received from the hole at the bottom into a large glass bottle. The charcoal will, from time to time, become clogged, and must then be cleaned by heating over the fire in a shovel. The sand or gravel should also be cleaned or renewed from time to time.

Cotton.—This material, which is a species of vegetable wool, has, however, but a small share of these properties, for it is exceedingly hard, does not absorb water, nor shrink in washing, and its conducting power is much more rapid than in wool itself. Cotton may be considered as an intermediate substance between animal wool and linen. It increases warmth, and rather promotes perspiration, while it parts with the perspired humours it imbibes more readily than linen. It is a species of garment which is cheap, and well calculated for various purposes. It seems to be peculiarly well adapted for the garments of women, or those who live much within doors, being light, pliable, and promotive of the excretion by the skin.

Cotton Carders, Dangers to.—

In preparing cotton for use in the mill by beating and carding, a vast amount of dust is generated; a proper arrangement of draughts, therefore, ought to be effected in

order to remove the danger of inhalation of the dust by cotton carders, as constant exposure to this must inevitably result in injury to the lungs.

Cough.—Cough is an exceedingly troublesome symptom of very various diseases. It may arise from irritation of the air passages or of the lungs; from aneurism, or from heart disease; or it may be connected with indigestion, or be merely hysterical, and due to no cause in particular. When a man has a tickling sensation in the throat, causing a cough, the most important question is, Does it arise from the condition of the throat itself, from the stomach, or from the lungs? and he should act accordingly, by addressing the remedies to whichever of these points give rise to the tickling.

Persons often cough half a night, or lie awake for hours in consequence of having eaten something which did not agree with the stomach, generally some unusual thing, or from having eaten a late or heavy supper, or having eaten moderately, but while greatly fatigued.

Sometimes, as in whooping-cough, cough constitutes the main part of the disease. Cough is mainly due to a kind of reflex or reflected irritation, the source of which may be in the lung or out of it, though most frequently in it. This, conducted by some nerve or other to the breathing nerve-centre, sets up violent expiratory efforts, whilst at the same time the chink between the throat and the windpipe is nearly closed. These efforts are renewed until all the available air is exhausted in the chest, and the patient is forced to desist until he can draw a breath. To a worn patient, as one in an advanced stage of consumption, such attacks of coughing are inexpressibly wearing, and to be avoided at all hazards. On the whole, the best thing for this purpose is a regulated temperature, as far as it can be kept even, and inhalation of steam is advisable.

Where there is a soreness of throat, the best means of relief is surrounding the neck

with an envelope of wetted linen or cotton, oil-silk, and thick flannel, each in the order mentioned. This, too, is the best application in the croupy cough and breathing with which children are apt to be suddenly attacked at night. As there is always a great dryness of the throat, a draught of water should also be given. A teaspoonful of salt in a tumbler of water will serve as a good gargle, where there is a disagreeable irritation, leading to a constant hacking. Ordinary coughs will seldom require more than a frequent sipping of gum-water or linseed-tea. If apparently coming deep from the chest, the application of a fomentation, prepared like the envelope of linen, oil-silk, and flannel, for the throat, though larger, is the best.

Cough, Chronic and Habitual, Mixture for.—See MIXTURES.

Cough Emulsion.—See EMULSIONS.

Cough, Homœopathic Treatment of.—For a hard, dry cough, *Aconitum napellus* is required; for a cough with wheezing, difficulty of expectoration and need of keeping the head high in bed, *Antimonium tartaricum*; for a dry, spasmodic cough, with sore throat and thirst, or for a nervous cough, *Belladonna*; for cough with expectoration and pain, especially between the shoulders when coughing, *Bryonia*; for cough accompanied with constipation and fulness at the pit of the stomach, *Nuxvomica*; for cough in children the most suitable remedy is *Ipecacuanha*, dose one drop of the tincture in one tablespoonful of water, given every two, three or four hours, as needful.

Cough, Nervous.—The celebrated Dr. Brown-Séguard once gave the following directions, which may prove of use to persons troubled with a nervous cough:—"Coughing can be stopped by pressing on the nerves of the lip in the neighbourhood of the nose. A pressure there may prevent a cough, when it is beginning. Sneezing

may be stopped by the same means. Pressing also in the neighbourhood of the ear may stop coughing. Pressing very hard on the top of the mouth inside is also a means of stopping coughing. And I may say the will has immense power, too. There was a French surgeon who used to say, whenever he entered the walls of a hospital, 'The first patient who coughs will be deprived of food to-day.' It was exceedingly rare that any patient coughed then."

Cough, Recent Mixture for.
—See MIXTURES.

Cough, Whooping, Mixture for.
—See MIXTURES.

Cough with Cold, Simple Cure for.—For the cough attending a common cold, the following is said to be the best, safest, and cheapest cough syrup ever made:—

Take one ounce of thoroughwort, one ounce of slippery elm, one ounce of stick liquorice, and one ounce of flax-seed; simmer together in one quart of water, until the strength is entirely extracted. Strain carefully, add one pint of best molasses and half a pound of loaf sugar; simmer them all well together, and, when cold, bottle tight.

As a general rule, it is best not to stop a cough, especially in children. Dr. Chavasse remarks, "Any fool can stop a cough, but it requires a wise man to rectify the mischief. A cough is an effort of nature to bring up the phlegm which would otherwise accumulate, and in the end cause death. Again, therefore, let me urge upon you the immense importance of *not* stopping the cough of a child. Ipecacuanha wine will, by loosening the phlegm, loosen the cough, which is the only right way to get rid of a cough. Thousands of children are annually destroyed by having their coughs stopped."

Counsel, Prudent, Respecting Diet.—See DIET, PRUDENT COUNSEL RESPECTING.

Course of Drain.—See DRAINS AND DRAINAGE.

Cowslip Wine.—This has a pleasant, cooling taste from the addition of the lemon in its composition. Hence it forms a pleasant summer drink, and is proper in all cases of feverish agitation. Like other home-made wines, it possesses something of a diuretic quality, but is particularly distinguished by being more grateful than any of them to the taste.

Crabs.—The crab is supposed by some persons to be a highly indigestible article of diet. (See CRUSTACEA.) It is, however, extremely delicious, whether eaten cold or hot, in the form of *Crab gratin*, or buttered crab. When eaten cold, the flesh should be carefully extracted from the shell and flaked with forks, and then dressed with some of the body of the crab, from the large shell, mixed with oil vinegar, salt and pepper. For buttered crab, the flesh is mixed with the internals, seasoned with pepper, salt, etc., and a little vinegar, and warmed in the oven after being put in the large shell, with some lumps of butter as big as hazel nuts on the top. In *Crab gratin*, the meat is mixed with bread crumbs and some butter, and browned in front of the fire or under a salamander.

Cramp (*Fr.* *crampon*; *Dutch* *krampe*, hook).—The cramp is a sudden and rigid contraction of one or more muscles of the body, mostly of the stomach and limbs, which is vehemently painful, but of short duration. The parts chiefly attacked with cramp are the calves of the legs, the neck, and the stomach. When the muscles are affected, they feel as though they were puckered and drawn to a point, or seem to be writhed and twisted into a hard knot; the pain is agonizing, and frequently produces a violent perspiration. If the stomach be the affected organ, the midriff associates in the constriction, and the breathing is short and distressing.

Cramp, Causes of.—The usual causes are sudden exposure to cold, drinking cold liquids during great heat and perspiration, eating cold indigestible fruits, overstretching the muscles of the limbs, and the excitement of transferred gout. Cold night air is a common cause of cramp, and it is a still more frequent attendant upon swimming.

Cramp in Legs, etc., in Pregnancy.—From the pressure which the enlarged womb exercises upon the nerves which pass to the legs, disagreeable cramps are experienced by the patient. For the relief of this painful condition, apply friction with the naked hand, with camphorated oil or with a liniment composed of laudanum and opodeldoc, in the proportion of one part of the former to two of the latter. Movement also may remove it, so that the patient should endeavour to walk about the room when the spasm comes upon her. Sometimes, instead of cramps in the legs, the patient suffers from a similar affection of the stomach and bowels. In this case the treatment to be adopted is to immerse the feet in hot water, and administer a draught consisting of twenty drops of laudanum in some camphor water. Hot fomentation should also be applied to the affected part. Should this affection prove troublesome by its frequent occurrence, much benefit may be derived by the employment, every night before going to bed, of a warm sitz-bath. The patient should remain in it for ten or fifteen minutes.

Cramp, Treatment of.—When it occurs in the limbs, warm friction with the naked hand, or with a stimulating liniment, will generally be found to succeed in removing it. Where the stomach is affected, brandy, ether, laudanum, or tincture of ginger, afford the speediest means of cure. In alarming cramp in the stomach from transferred gout, a large dose of brandy and opium, with mustard cataplasms to the feet, will frequently save the patient from impending death.

Cream.—This name is given to the butter of milk, when cows' or other milk is allowed to stand, so that the butter floats. It consists principally of butter, and when placed under the microscope, is found to consist of little globules, which, from their peculiar action on light, give the white appearance to milk. Cream is more digestible than butter, and may be taken with advantage in cases where cod liver oil is needed, but cannot be taken.

Some notion of the average composition of cream may be gathered from the following analysis, but the range of variation is great, the water alone varying between 45 and 65:—

	In 100 parts.
Water.	55.0
Casein.	6.0
Milk-fat	36.3
Milk-sugar	2.5
Mineral matter.	0.2

Cress.—Cresses are of two kinds, the garden and water-cress. They are both acrid, but not of a poisonous nature. The garden-cress is one of the earliest vegetables; it has a sharp and somewhat bitter taste: hence, from its operating in some degree as an aromatic, it promotes digestion. It has also been found very useful in scurvy. The water-cress has the same bitter, pungent taste as the garden-cress, and ammonia is procured from it. It is also eaten, in its natural state as gathered, as a salad; it is more tender and in better condition in winter than at any other time. By boiling, its properties are destroyed. Water-cress was first cultivated at Springhead, near Gravesend, and this place and the water-cress beds near Farningham are still the chief sources of supply for the London market.

Croton Oil.—When taken internally in a dose of about one drop, this drug exercises intense purgative action. It is highly dangerous in its effects, and should only be taken by order of a duly qualified medical practitioner. For outward application, rub the surface to which the oil is to be applied

with a bit of flannel, and then immediately take up one, two, or three drops of the oil on a rag, and cover the reddened surface; apply this again at intervals of from four to six hours, until small pimples are seen all over the spot rubbed. No oil is to be used after this. Do not try to soothe the burning: irritation is wanted; tie a soft handkerchief over the part.

Croup (Scotch, roup, hoarseness, from the rough, harsh sound).—Croup is a disease of infancy and childhood, very seldom, if ever, occurring after the age of puberty. At its commencement it is an inflammation and thickening of the edges of the *rima glottidis*, or the chink at the top of the windpipe, by which the sound of the voice is regulated; and hence in this disease the cough has a remarkably hoarse, ringing sound, as if made through a trumpet, and is followed by a sonorous inspiration something like that of whooping-cough, but shriller; and the child's crying or speaking betrays hoarseness in the intervals of the cough. As the disease advances, inflammation runs along the mucous lining of the windpipe, and through its ramifications in the lungs, and in some cases a muco-purulent exudation from this membrane, becoming tenacious in the upper part of the passages, forms a membranous tube there, which still further impedes the breathing, and is sometimes expectorated either in shreds or in larger portions, which forms one of the characteristics of croup in its advanced stage. The parts implicated in this disease are so delicately formed, and are so essential to breathing, that if the appropriate treatment be not instantly and vigorously adopted in a genuine and severe case of it, a fatal termination will generally occur on the second, third, or fourth day.

Croup may occur at any period from the second month after birth to puberty; and the younger the child is after it is weaned, the more liable it is to the disease. It is most apt to occur in the sanguineous temperament and the full habit. It often seizes a child not perfectly recovered from a previous ill-

ness, and is liable to a recurrence at distant intervals on exposure to causes which ordinarily produce only common catarrh. Yet it occasionally occurs in the adult, generally as a consequence of its extension from the fauces to the larynx. It is chiefly prevalent in the neighbourhood of large bodies of water, running or stagnant, salt or fresh, and especially among the ragged and half-starved children of the poor, who live on the sea-coast or near the banks of canals or rivers. But it also occasionally prevails in other situations as an epidemic, especially during the continuance of north or easterly winds, after heavy and long-continued falls of rain.

Croup, Symptoms of.—There is, perhaps, no disease to which the human body is subject the progress of which is so frightfully rapid. In a few hours after the attack, the morbid secretion is often formed to such an extent as to prove inevitably mortal; yet the inflammation of which it is the result might have been checked by immediate vigorous and judicious treatment. It is, therefore, of the last importance that those who have the care of infants and young children should be familiar with the first signs of the approach of this dreadful malady. Of these a graphic description has been given by Dr. Cheyne, who had abundant experience of the disease in situations in which it is but too prevalent. After having pointed out the importance of attending to the first appearance of hoarseness, which in very young children does not usually attend common catarrh, and consequently, when observed in a child living in a district which generates croup, this symptom is always much more deserving of attention, especially if accompanied with a rough cough, than it would be after puberty, this excellent physician says:—

“In the approach of an attack of croup, which almost always takes place in the evening, probably of a day during which the child has been exposed to the weather, and often after catarrhal symptoms have existed for several days, he may be observed to be excited; in variable spirits; more ready than

usual to laugh or to cry; a little flushed, occasionally coughing, the sound of the cough being rough, like that which attends the catarrhal stage of the measles. More generally, however, the patient has been for some time in bed and asleep before the nature of the disease with which he is threatened is apparent; then, perhaps, without awaking, he gives a very unusual cough, well known to any one who has witnessed an attack of the croup; it rings as if the child had coughed through a brazen trumpet; it is truly a *tussis clangosa*; it penetrates the walls and floor of the apartment, and startles the experienced mother: “Oh, I am afraid our child is taking the croup!” She runs to the nursery, finds her child sleeping softly, and hopes she may be mistaken. But, remaining to tend him, before long the ringing cough, a single cough, is repeated again and again; the patient is roused, and then a new symptom is remarked; the sound of his voice is changed, puling, and as if the throat were swelled; it corresponds with the cough; the cough is succeeded by a sonorous inspiration, not unlike the kink in pertussis—a crowing noise, not so shrill, but similar to the sound emitted by a chicken in the pip (which in some parts of Scotland is called the roup, hence, probably, the word croup); the breathing, hitherto inaudible and natural, now becomes audible, and a little slower than common, as if the breath were forced through a narrow tube; and this is more remarkable as the disease advances. A blush of inflammation may sometimes be detected on the fauces, and in some rare instances, a slight degree of swelling round the larynx, and the child complains of uneasiness in his throat, and says he is choking. The ringing cough, followed by crowing inspiration, the breathing as if the air were drawn into the lungs by a piston, the flushed face, the tearful and blood-shot eye; quick, hard, and incompressible pulse; hot, dry skin; thirst, and high-coloured urine—form a combination of symptoms which indicate the complete establishment of the disease. Sometimes the symptoms enumerated subside about midnight, even in the absence of

medical treatment; perhaps to return in the course of the following evening. From seven or eight o'clock till midnight this complaint is always at its height; but in general, unless the patient be treated with promptitude and judgment, the disease may be expected to terminate fatally; a new order of symptoms, the second stage of croup, as it is called, taking place in the course of the next day."

Croup, Cause of Noise in.—See STRIDOR.

Croup, False.—This is a disease closely akin to croup, called false croup, the symptoms of which are alarming, but it is much less dangerous than the genuine croup. It is this latter form—the false croup—to which so many children are subject upon slight exposure.

Croup, False, Treatment of.—In both true and false croup the attack comes on so suddenly that it is very important that those who are with the child know how they may relieve the distressing symptoms while anxiously waiting the arrival of the physician. To a child two years old the nurse may give at once twenty or thirty drops of wine of ipecacuanha, and repeat it in ten minutes if the child is not relieved. The warm bath is also useful, and the foot bath, with mustard. The room should be warm, and the atmosphere may be made moist by keeping a kettle of water boiling on the fire. A sponge wrung out of hot water and applied under the chin often gives great relief.

Care should be taken with the diet of a child who is subject to croup. It should never be allowed anything but simple and easily digested food, the evening meal especially being light, consisting principally of bread and milk.

In any inflammation of the lungs or air passages the child should be kept in a room the temperature of which should never be allowed to fall below 70° Fahr., but should ordinarily be higher than that. Flannel should be worn next the skin, and all expo-

sure must be carefully avoided for a long time. To relieve the thirst, which will often be very great, a little water should be given frequently. The diet, which should always be light, will be prescribed by the physician. When there is any fever, it is better to keep young children in bed; infants will want to be held sometimes in the lap, but they should be kept in bed the greater part of the time, and older children should be kept in bed though not very sick. A warm gown may be put on over the nightdress, and they can amuse themselves, if so disposed, with books and toys.

Crustacea (*Lat. crusta*, hard outer shell of anything).—The crustacea commonly eaten in this country are lobsters, crabs, fresh-water crayfish, shrimps, and prawns. Lobsters and crabs are said to be not very easy of digestion. The latter should always be cleansed with the greatest care before they are sent to table. These crustacea are very coarse feeders, and very probably it is this which causes them to disagree so frequently even with healthy persons.

Cry for Rest.—See SLEEP, DOING WITHOUT.

Cucumbers (*Lat. cucumis*, cucumber).—The cucumber is more digestible, as well as more juicy, when grown quickly under glass than when grown slowly in the open air. The rind is indigestible. The fruit contains little else besides water, some grape sugar, and a trace of volatile flavouring matter. Peeled cucumbers are thus composed:—

	In 100 parts.	In 1 lb.	
		oz.	gr.
Water	96.2	15	171
Albumen	0.2	0	14
Sugar (glucose) .	2.0	0	140
Pectose and gum.	0.7	0	49
Cellulose	0.5	0	35
Mineral matter .	0.4	0	28

Whether eaten fresh or in the form of pickles, cucumbers are of but little value, except to give variety, and to stimulate the

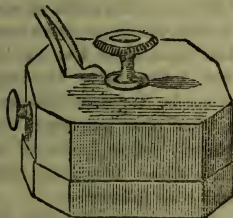
appetite. To some temperaments they are decidedly objectionable, and must be used sparingly or wholly abstained from. Those who taste them over and over again after they have eaten may as well do without them—and they can do so with the consolation that they are losing but little.

Cumin.—This is an umbelliferous plant, of which we hear at a very early date. Its fruits contain an essential oil of remarkably powerful odour and taste. They are employed in preparing some spirits and cordials, and are a constituent of curry-powder. Dutch cheese is occasionally flavoured with cumin.

Cupping.—This is a method of local blood-letting, practised for the relief of inflammation and congestion in internal organs. The instruments used are bell-shaped glasses, varying in size, and a scarificator, which is a brass case containing ten or a dozen lancets, the edges of which can be made to start out by touching a spring. The operation is performed in



CUPPING GLASS.



SCARIFICATOR.

the following manner:—After the skin over the affected part has been well washed with a sponge dipped in hot water, it is covered by one or more cupping glasses, the air within which has just been rarified by the flame of a small spirit lamp, or by pieces of blotting paper steeped in spirits of wine and then ignited. Up to this point the proceeding is called *dry cupping*; but if it be desired to draw blood, each glass is removed, the scarificator applied and discharged, and the glass again heated and

placed over the small lined wounds formed by the lancets. As the rarified air within the cupping glass cools and becomes condensed, the skin rises up as a dome-shaped swelling, and blood is sucked out from the numerous lancet wounds.

Curds.—Curds, the coagulated part of milk, when treated with rennet to make curds and whey, or any acid, or even treacle, are not to be recommended. When taken in large quantities, they are highly oppressive to the stomach.

Cure for Constipation.—See CONSTIPATION, A CURE FOR.

Cure for Drunkenness.—See DRUNKENNESS, CURE FOR.

Cure for Indolence.—See INDOLENCE, A CURE FOR.

Cures for Sleeplessness.—See SLEEPLESSNESS, HOW TO CURE.

Currants.—Black, white, and red currants do not differ much in composition from the gooseberry. It should be understood that they are not nearly related to the small dry fruit known as currants, which are produced by a small vine. These dried currants are decidedly indigestible.

Dried currants are chiefly cultivated in the Morea and the Ionian Islands, Corfu, Zante, etc. Those of Zante are cultivated in an immense plain, on the shore of the island, where the sun has great power, and brings them to maturity. The fertile vale of "Zante the Woody," produces about 9,000,000 lbs. of currants annually.

Currant Wine.—Currants afford a good wine, which assumes, after being bottled two or three months, a delicious taste with some tartness, and possesses a beautiful ruby colour and pretty strong body. It is a beverage well suited for the summer, and is useful in bilious complaints during that season. From its acescent quality it is considered as an antidote against the influence of narcotic poisons.

Curry.—This is a condiment in general use throughout almost all parts of India. It seems in that climate to be an article of actual necessity, and the appetite for it is instinctive. This may, perhaps, be accounted for by the effect of the heat on the skin; and as this causes a continual and abundant waste from perspiration, the stomach requires to be stimulated also, in order that during digestion there may be a sufficient determination of blood to it. It is most wholesome, and, when not too hot, is said to be beneficial to children in being slightly aperient. Mutton, fowl, fish and rabbit are the best meats for curry, which should always be accompanied by boiled rice. Genuine curry consists of turmeric, cardamoms, ginger, allspice, cloves, black pepper, coriander, cayenne, fenugreek, cumin. Curry is frequently adulterated with lead, mercury, iron, salt, rice, and potato flour.

Curvature of the Spine, Angular.—See SPINE, ANGULAR CURVATURE OF THE.

Curvature of the Spine, Lateral.—See SPINE, LATERAL CURVATURE OF THE.

Cuspids.—See PERMANENT TEETH.

Custom and Sleep.—The influence of custom may affect the protraction as well as the abbreviation of sleep, and the complaining voice of the sluggard which we have all been used to hearing in our childish days, drowsily echoes with the call of his tyrannical master—Habit. The state of the brain produced by an excess of sleep is very unfavourable to the exercise of its powers of perception and action. Such a condition may almost be described as a chronic disorder of the nerve centres, and is often the result of natural changes in the direction of decay from old age. The growth of habit and self-indulgence may prematurely bring it on, and this danger, as well as the opposite one of taking too little sleep, must be carefully guarded against.

Cuticle.—See EPIDERMIS.

Cutis Vera, or True Skin.—See CORIUM.

Cuts in the Throat.—The attempt at suicide by cutting the throat is frequently abortive, but is seldom made without a formidable wound and great loss of blood. All that can be done without the intervention of a surgeon in such cases is to sponge with cold water, bring the loose flaps, as well as you can, into their natural position, apply two or three compresses of linen, and fasten them by a handkerchief, tied round the neck as firmly as can be done without interrupting respiration.

Cutting the Teeth.—At about the sixth month after birth the process known as the eruption of the teeth begins. It is not, as the common expression "cutting the teeth" would indicate, a process of laceration, tearing or cutting, but of removal of impeding tissue by absorption, which allows the passage of the teeth through the gums. There is no absolute uniformity either as to the time or the order of eruption. The rule is that the lower teeth precede the upper of the same class two or three months: but not infrequently the upper precede the lower by the same difference of time. Fig. 1 illustrates an upper deciduous, or temporary, set of teeth, of which five are on each side. The usual order of their eruption is as follows:—

2 Central incisors (No. 1) between the 6th and 8th months.

2 Lateral incisors (No. 2) between the 7th and 10th months.

2 Canines (No. 3) between the 14th and 20th months.

2 First molars (No. 4) between the 12th and 14th months.

2 Second molars (No. 5) between the 20th and 36th month.

The lower set consists of the same number of teeth, known by the same names. They appear, as a rule, in the same order as the upper teeth, generally preceding the

latter by a few weeks. Fig. 2 is a side view of a child's lower jaw. The teeth in Figs.



FIG. 1. TEMPORARY SET OF TEETH.

1 and 2, marked 6, do not belong to the temporary set. They are sixth-year molars.

Cutting the Permanent Teeth.

The following are the times of cutting the permanent teeth :—

Age.	Teeth Cut.
6 years .	Anterior molars.
7 „ .	Central incisors.
8 „ .	Lateral incisors.
9 „ .	Anterior bicuspid.
10 „ .	Posterior bicuspid.
11 „ .	Canines.
12 „ .	Second molars.
17-25 „ .	Posterior molars (wisdom teeth).

Daily Bath.—The daily bath is desirable for all when it can be had without inconvenience. It may be used advantageously as a promoter of sleep. During hot weather the rapid sponging of the whole body with cold water, just before going to bed, is an excellent soporific; and in winter the tepid bath will be hardly less effectual. Even to wash the hands and feet just before going to bed leaves a feeling of satisfaction and comfort well worth the trouble.

Daltonism.—See COLOUR BLINDNESS.

Damp Beds.—Damp beds, though perhaps less frequent than damp clothes, are most fatal in their effects; for not only is the body at rest, and not, therefore, able by exercise to warm the surface and thus throw off the ill effect, as can be done with damp clothes, but while we are asleep, it is, from physiological reasons, more open to any malign influence from cold or other causes. The catalogue of serious and fatal diseases which may directly be traced to this cause alone is very long—consumption, pneumonia, asthma, rheumatism, paralysis, or perhaps a long diseased life with a crippled body. When a person doubts whether the bed in which he is about to sleep is well aired, or rather when he does not know for a certainty that it is so, he had better either pass the night out of bed altogether, or get between the blankets with his clothes on.

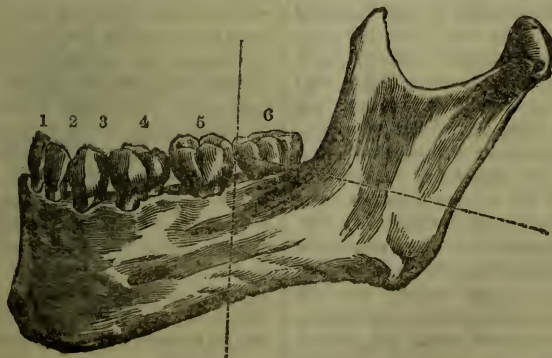


FIG. 2. CHILD'S LOWER JAW.

It is not enough that a bed should have been well aired at some distant time, but it should be kept free from damp, as it rapidly attracts moisture from the atmosphere.

Damp Feet.—The fact that wet and cold feet are so prolific of disease should make us very careful to avoid the cruelty of fitting up schools and similar places without making adequate provision for the welfare of their young occupants. The circumstances in which wet and cold feet are most apt to cause disease are those under which the person remains inactive, and where consequently there is nothing to counterbalance the unequal flow of blood which then takes place towards the internal parts; for it is well known that a person in ordinary health may walk about or work in the open air with wet feet for hours together without injury, provided that dry stockings and shoes be put on immediately on coming home. It is therefore not the mere state of wetness that causes the evil, but the check to perspiration and the unequal distribution of blood to which the accompanying coldness gives rise.

Dancing.—Dancing, properly so-called, is the active exertion of the body in sprightly, graceful movement, accompanied with exhilaration of the mind, and when thus indulged in by the young is a most beneficial and healthful recreation. It is no argument against dancing in itself that it is so often connected with many things that are injurious, such as heated rooms, late hours, and the like—these belong to other considerations; but as an exercise, congenial both to the minds and the physical requirements of the young, it is, like every amusement in which the mind enters with pleasure and interest into the exercises of the body, a most efficient promoter of health, and it is much to be regretted that its abuse and associations, in some instances, both with physical and moral evil, should cause its abandonment in any place where

there are young people. With regard to extra exercises, such as dancing, and athletic sports generally, which are only engaged in at intervals, it is certain that their beneficial effect upon the functions of health depends quite as much upon the excitement of the mind as upon that of the body; and everyone's experience must tell him or her how much the exercise that is most liked and most indulged in owes its renovating influence to the mental stimulation which accompanies it.

Dancing, Robinson on.—Of dancing as an exercise, Dr. Robinson, in his work on Diet and Regimen, speaks very favourably. "Exercising," he says, "so many muscles otherwise little used—exercising them fully and duly and without violence—exercising them to the cheerful influence of music—exercising them in forms of grace and beauty—dancing may be made an important and valuable part of the physical education, and as such should be spoken of and promoted by the powerful voice of the medical public. The balanced action of the opposing muscles, the active use of the different articulations, the extensive and varied action of the spinal muscles effected by dancing, and the degree to which the mental excitement produced by it enables the exercise to be made use of without undue fatigue, are strong reasons for so decided and favourable an opinion; and this, without obtrusive interference with opinions as to the propriety, or otherwise, of carrying the practice of dancing to an excess in the after life, and making it a plea for late hours, etc. Let people think as they will of public balls, or even of private balls; with the conscientious opinions of others it is not my wish nor intention to interfere; but to dancing in the schoolroom, or among the members of the family circle, few will object; and it is not too much to say that if dancing could be made a daily, not nightly, exercise among the people of all classes, the healthiness and the expectation of life, as well as its happiness, would be increased."

Dangerous Visits to Sick Persons.—Every one who has occasion to visit a person affected with an infectious or contagious disease should take care not to do it on what is called an empty stomach. The visitor must not be weakened by the cravings of hunger and want of food. It may be well, too, to guard the mouth and nostrils with a breathing apparatus commended by Professor Tyndall, who, holding that contagious and infectious diseases are conveyed from the ill to the well by means of germs floating in the air, supposes that they may be thus stopped on their course to the mouth and lungs, and prevented from poisoning the body. The handkerchief, or some folds of cotton or wool, will answer the purpose if the more artificial contrivance is not at hand.

Date.—This is a wholesome and palatable fruit, chiefly derived from the countries in Africa between the northern coast and the Equator. The fruit contains more than half its weight of sugar, but there is a fair amount of flesh-formers present as well. The Arabs, and dwellers in the northern parts of Africa, find in the date an article of food that makes an excellent substitute for bread in those regions, and is capable of sustaining life for a long period.

Deadly Nightshade.—The berries of Deadly Nightshade are often gathered



DEADLY NIGHTSHADE.

and eaten by children. They produce nervous tremors and symptoms resembling in-

toxication, as well as vomiting and griping, and the pupil of the eye becomes remarkably dilated. If the quantity eaten be sufficient—and a very few berries will be sufficient—the above symptoms are soon succeeded by convulsions and death. The treatment consists in the immediate administration of an emetic, or the use of the stomach pump; then a brisk cathartic, and lastly, repeated doses of vinegar, as recommended after opium. Nearly the same symptoms are produced by henlock, thorn apple, and tobacco, and a similar treatment is called for.

Deaf and Dumb, The.—When a child is born deaf, or becomes deaf before it has learned to talk, it is said to be deaf and dumb, or a deaf-mute. In some cases the child is deaf from a disease which has also rendered it stupid intellectually; but as a rule a child becomes a mute only because it has never heard the sound of speech. In such cases the child has no idea of what spoken language is. It was once supposed most mutes were born deaf; but this is not the case, one half in some schools being known to have been born with power to hear.

It has been already said that a blow on the head, as from a fall, may entirely destroy the hearing while the child is a mere infant. But very often no such accident can be assigned as the cause of deaf-dumbness. However, it will then be found that the child had a severe attack of fever, and perhaps convulsions in early infancy, or it may have had severe catarrh of the chest, or scarlet fever, measles, or whooping-cough, with or without running from the ear. Any one of these may be the direct cause of deafness, and the child thus deprived of hearing cannot learn to talk.

Deaf-dumbness may be hereditary. This has been noted in a family where the mother was very deaf, all the children were all but deaf, and some of them so deaf, and at so early an age, as to be dumb. In such cases there may be a grave doubt as to the propriety of members of such a family marrying, and

thus running the risk of propagating a mute stock. This should be one of the considerations in the intermarriage of relations, especially if among the latter there should be either a tendency to deafness or to deaf-dumbness. When deaf-dumbness is plainly due to an accident or to disease in infancy, without there being any other cases of deaf-muteness in the family, or any signs of catarrhal deafness, there would be no danger of transmitting the defect to posterity.

Deaf and Dumb, Education of

the.—Physicians are constantly called on to decide whether a child is deaf and dumb, and if it be, to suggest a cure if possible, and if not, to advise a plan for the proper education of the little patient. In very young children it cannot always be readily decided whether total deafness, and hence prospective dumbness, exists or not. Without being obliged to determine whether the child is totally deaf, a physician may find, on examination, that it is too deaf to learn to talk by hearing others speak, and, without further losing time, he should advise its parents to arrange for its proper education in another way. The education of deaf mutes is accomplished in two ways, viz., by the use of signs, "finger language," and by the means of "lip-reading," and by phonetic writing or visible speech. Before describing any of these methods of education of deaf-mutes, it must be borne in mind by the reader that it is not our object to advocate any one method to the exclusion of the others. It is believed that all have advantages and disadvantages. The only object in alluding to these various methods is to let parents know what can be done for their children afflicted with deaf-dumbness.

The sign-language is the most common form of communication in the institutions for the mute in this country. It has been found that where this form of language is used, no other method can be successfully introduced at the same time.

Lip-reading is the ability on the part of the mute to understand what is said to him by watching the lips of the speaker; it is

taught very largely in Germany, and is often called the German method. By this system, also, the *dumb are taught to speak* as well as to understand speech. Their articulation, of course, is not like ours, being peculiar and unnatural in sound, yet entirely intelligible. The writer has conversed in ordinary tones, in German, with German deaf and dumb children in Vienna, and was perfectly understood by them, the children replying in German that they perceived he was a foreigner, so delicate was their perception of the motion of the lips.

Phonetic writing, or visible speech, the system of A. Melville Bell, is based on the physiological action and position of the vocal organs during speech, and is practically an alphabet of sounds, in which the symbols, either printed or written on the blackboard, inform the child how to place its lips, tongue, and palate, and produce a vocal sound. It has been successfully employed in this country and in America. Lip-reading and visible speech may be of great value in the education of children who have become deaf after having learned to talk in the first four or five years of life. Their conception of what speech is, and their ability to use it, are invaluable aids in their further education by means of lip-reading and articulation, or by visible speech.

Hence, no matter how deaf a child may become after it has once learned to talk, it should be discouraged in the use of dumb signs, and encouraged to go on talking. It is desirable that a mute who is to be taught lip-reading and talking should begin his exercises before he is seven years old. It will then require about eight years of study and practice in this way, but at the end of that time he will be able in most cases to converse with and understand any one he meets. In most instances mutes thus educated can converse in several languages.

It is to be feared that, in the case of children, deafness is too often mistaken for stupidity. "Very sad," says Dr. Moore, "it is to think how often a child is thus punished for his misfortune, and, it may be irreparable injuries are inflicted on the

mind or temper of this poor victim of unintentional injustice. It is hardly necessary to insist upon the care which is requisite in examining the state of the hearing power in a child, or to refer to the fact that children will often say, and doubtless think, that they hear a watch when they do not.

"The descriptions of the deaf are generally very minute, but never very poetical; and this arises from the defective association between sights and sounds, on which so much of sentiment and suggestion depends. They are apt to embrace all that is seen, but to omit all the audible, all the voices of life, and hence all their dramas are pantomimes. For, alas! all nature is dumb to them—at least, as regards vocal expression; but then, here again rejoice with them; for if their powers of attention be properly cultivated, they certainly learn more readily and more deeply to understand the visible language of action, and the meaning written on the face of every living thing. Hypocrites had, therefore, better avoid the deaf, or their dark souls will be read through their disguises of light, for the deaf are good practical physiognomists, and are always keenly on the watch to discover the meaning of the spirit in every movement of the body and every feature of the face; for every soul seeks its highest interest in sympathy with others."

Deaf Children, Education of.—

There is a large number of deaf children who are by no means deaf and dumb, having lost their hearing after they had learned to talk. After a child has once learned to talk, no matter how deaf it may become, it should be encouraged in every way to continue to use speech, and not signs, in communicating with friends and family. In order to induce him to continue to speak, his signs must be disregarded. All children who grow deaf, will soon begin to make signs, and unfortunately the latter are encouraged by being answered in the same way. It would be very easy to make such a child look at the mouth and understand the signs made by the lips.

M. D.

But many children are too hard of hearing to escape being under disadvantages at ordinary schools, where they are competing with hearing children. Such children, on account of their bad hearing, are often imposed upon both by companions and instructors. Do as they may, such children must fall behind in their studies. But it is not desirable to isolate these unfortunate children in separate classes, because it not only draws painful attention to them, but it is highly desirable that they should continue their studies among those with whom their lives are to be spent.

Nevertheless, some allowance should be made for their defective hearing. The first step in this direction is to find out whether the child is deaf or inattentive; if he is deaf, he surely cannot fail to be inattentive. A child is, as a rule, unaware of his defective hearing, especially a young child, at the beginning of his deafness; it is, therefore, the duty of his elders to find out and determine the amount of his deficiency. It can be expressed accurately in feet and inches.

It has been shown, by an American physician that of 8,715 cases of ear disease, 2,175, or 25 per cent., were children under 14 years of age, all of whom were pupils in the public schools. In such children, the distance at which they can hear the teacher's voice should be carefully measured by testing with words and sentences, and there they should sit, the children with good hearing being placed farthest off. Nothing but the teacher's voice should be used, and that in ordinary tones in these tests, for the child goes to school to hear those sounds.

Deafness, Chronic, with Discharge from Ear.—When such a chronic discharge from the ear has become fully fixed, the usual course on the part of badly taught patients is to desist from all treatment. And this is hardly to be wondered at, for their experiences with domestic treatment have, as a rule, not been satisfactory. But now is the time that something should be done to rectify mistakes in

treatment, and to try to check the discharge. Science of the present day has placed in the hands of the educated surgeon special means for the relief of ear diseases which he alone can apply, and of professional aid the sufferer should take advantage.

There is one direction that should be given here to the non-professional reader for the management of an ear affected with a chronic discharge. It is to keep it perfectly clean by means of syringing once or twice daily, or oftener if necessary. This will tend to keep down the disease, and place the ear in a better condition for proper treatment when a surgeon has been called in for aid.

Deafness, Chronic, without Discharge from Ear.—Very often ear-ache is not attended by a discharge. This is equal to saying there has been no rupture of the drum, though matter may have formed behind it. In these cases the inflammation goes down, either of its own accord, or because the treatment has allayed it. The matter, therefore, which may have formed is small in quantity, and has either escaped into the throat by the Eustachian tube, or still remains in, though not filling, the cavity of the drum. In these cases the ear continues to feel stuffed up, and is liable to suffer from every change of the weather, or every cold the patient may catch. Such cases are the foundation of chronic hardness of hearing, and are usually found in connection with chronic catarrhal disease of the throat and nose. There is more or less buzzing or singing, either steady or with the pulse in both cases, or in one only, and sometimes a dizziness in the head—all of which greatly distress the patient, and frequently depress his spirits. With this form of ear disease, ear-dizziness may be a prominent attendant.

Gradually, too, the hearing fails in one or both cases; the patient begins to lose some words first at church, or in lectures; then conversation begins to be attended with some difficulty; a sense of confusion

in the head comes on when in the midst of great noises, as in the street, or in a large room filled with a number of talking people.

This kind of ear disease, chronic catarrh of the ear, is the most common cause of hardness of hearing and deafness, and as such is the object of many forms of treatment and much quackery. It may be said at the outset that nothing can be put into the external ear which can in any way benefit this form of deafness. As a rule, any kind of drops put into an ear affected with chronic catarrh will do more harm than good. The disease lies beyond the drum-head, in the drum cavity, and in the Eustachian tube. Now, as the drum-head shuts off, air-tight, the middle ear from the external ear, drops put into the latter can by no means reach the former. They only fall on the drum-head and irritate it. Treatment, to be of avail, must be directed to the throat, the nostrils, and the Eustachian tube; possibly through the latter to the drum-cavity. But that is a matter to be left to the judgment of the surgeon. The body must be properly, that is, warmly, protected with heavy under-clothing—a matter not to be specially described here, and the feet must be most carefully kept *warm and dry*. The condition of the feet has a most intimate relation with the welfare of the throat and the ears. If, on going into the open air, the ear or ears should feel the cold until they ache, then they must be protected either by ear-muffs, a veil, a scarf, or a piece of cotton in the mouth of the canal of the ear. Of course, mere coldness of the auricle in very cold weather is to be expected, and is not specially prejudicial to hearing. What is alluded to here is ear-ache, deep in the ear and throat under the ear and jaw, and hence the words of caution as to protection. But in no case must cotton be worn in a running ear.

Death-beds.—It has been remarked by Miss Florence Nightingale that “the physical difference of death-beds by different diseases is little observed. Patients who

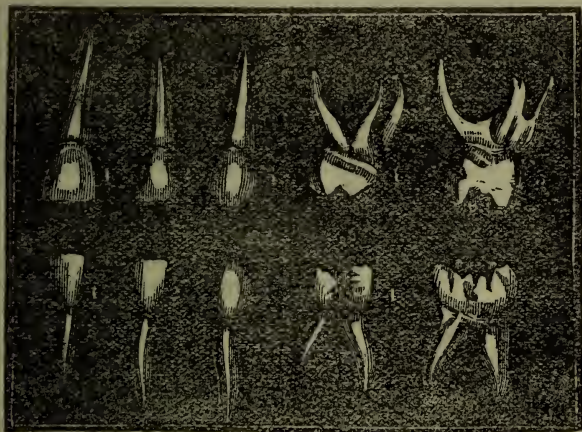
die of consumption very frequently die in a state of seraphic joy and peace; the countenance almost expresses rapture. Patients who die of cholera, peritonitis, etc., on the contrary, often die in a state approaching despair. The countenance expresses horror. In dysentery, diarrhoea, or fever, the patient often dies in a state of indifference. Again, in some cases, even of consumption and peritonitis, there are alternations almost of ecstasy and of despondency. In the lives of the "Saints," and in religious biographies, we often find

Debility with Constipation, Mixture for.—See MIXTURES.

Decay of Teeth, a Sign of Old Age.—See TEETH, DECAY OF.

Decay of the Teeth.—See TEETH, DECAY OF THE, OR CARIES.

Deciduous Teeth.—The deciduous or temporary teeth are much smaller than the permanent, although the roots are generally larger and longer in proportion to the size of the crowns than those of the



TEMPORARY TEETH OF THE LEFT SIDE.

such death-beds described truly enough. But then the patient and friends make unwise exertions to bring back the state of rapture, quite unaware that it may be only a physical state. And if it does not return, both may, perhaps, consider that its absence is a token of reprobation or "back-sliding." Friends, in all these cases, are apt to judge most unfairly of the spiritual state of the sick from the physical state."

Death, Growth of Hair after.
—See HAIR, GROWTH OF, AFTER DEATH.

Death, Signs of.—See SIGNS OF DEATH.

adult set. In the accompanying illustration the temporary teeth—superior and inferior—of the left side, are represented. There are only twenty teeth in the temporary set—four incisors (1, 2), two cuspids (3), and four molars (4, 5), in each jaw. There are no bicuspid and no third molars or wisdom teeth in the temporary set. Four bicuspid and two wisdom teeth in each jaw, which are not in the deciduous or temporary set, make the permanent set to consist of thirty-two teeth.

Decoctions.—(*Lat.* decoctus, boiled down; from *de*, from, *coquo*, I cook).—Decoctions are aqueous solutions of the

active principles of vegetable substances obtained by boiling. This method is adopted in order to obtain principles which cannot be separated by simple infusion in cold or even boiling water. If the solution employed in making a decoction is dry, it will be better to pound it so as to expose a larger surface to be acted upon, and in like manner if fresh it should be cut into slices. They are generally strained when in a cold stato. Small quantities only should be made at a time, as they are apt to change.

Aloes, Compound Decoction of.—Take of extract of socotrine aloes in powder, myrrh in powder, and saffron, of each a drachm; extract of liquorice, half an ounce; carbonate of potash, two scruples; water, a pint. Boil down to twelve ounces and strain, then add four fluid ounces of the compound tincture of cardamoms. The dose is from one to four tablespoonfuls. This preparation acts as a tonic and mild purgative, and is useful in constipation and female irregularities; also when the action of the liver is sluggish, benefit may be received from its use.

Barley, Decoction of.—Take of pearl barley, two ounces; water, five pints. Wash the barley in cold water, reject the washings, and having poured over it half a pint of water, boil for five minutes; repeat this also, and, having added the remainder of the water boiling, let the whole boil down to two pints, then strain. Barley water thus made is of frequent employment in the sick-room, and is serviceable in all cases of fever and inflammation, especially in inflammatory affections of the urinary organs. It may be taken in any quantity. To this simple decoction of barley various substances are sometimes added, such as sliced figs, raisins, liquorice root, slices of lemon, and sugar-candy.

Oak Bark, Decoction of.—Take of oak bark, bruised, an ounce; water, a pint. Put into a covered vessel and boil for ten minutes, then strain. The dose of this preparation is from two to six tablespoonfuls. Formerly this preparation was used as a

tonic, but its use in this respect has been superseded by quinine. It is as an astringent that it is principally employed now. It is used as a gargle in relaxed throat, internally in diarrhoea, and also as an injection and lotion.

Sarsaparilla, Compound Decoction of.—Take of Jamaica sarsaparilla, cut transversely, four ounces; boiling water, four pints. Macerate in a covered vessel placed near the fire for four hours. Remove the sarsaparilla, bruise it, and place it again in a covered vessel along with one ounce each of the following substances; viz., guaiacum wood turnings, sassafras root in chips, bruised fresh liquorice root, and three drachms of mezereon bark. Macerate for four hours longer, then strain. Opinion is divided as to the utility of sarsaparilla, some regarding it as inert, while others look upon it as an excellent remedy in cases of chronic rheumatism and venereal affections; also in obstinate skin diseases. The dose is from three to six fluid ounces.

Decomposing Animal Matter, Effluvia from.—Effluvia from decomposing animal matter often contaminate the air to such an extent as to give rise to pestilential disorders. The carcasses of men and horses upon battle-fields bring on epidemics of diarrhoea, dysentery, etc., and the vapours given out from thickly crowded churchyards greatly increase the sick and death-rates of neighbourhoods in which they are disseminated.

Deficiency of Exercise.—See EXERCISE, DEFICIENCY OF.

Deficiency of Sleep.—The effects of an habitual deficiency of sleep are a sense of wretchedness and prostration, frequently accompanied with great restlessness. These symptoms may be due either to an emotional excitement which keeps slumber from the eyelids, or to a voluntary effort to goad the intellect into continuous activity. Such an event is a very common occurrence in the lives of industrious students and business

men, who, with a laudable desire for distinction, allow themselves less than the quantity of repose actually needed by their system. Headache, fulness, heat, throbbing, and various other unpleasant sensations about the head give warning that the brain is being overtasked; and should this warning pass unheeded, sleep, which at first it was difficult to resist, becomes even more difficult to obtain—a state of general restlessness and feverish excitement is induced; and if, in spite of this, the effort be continued, serious consequences in the form of brain fever, apoplexy, insanity, and loss of mental power from softening of the brain, partial or complete, are almost sure to be induced. Such an effort may be sustained by certain individuals much longer than by others, but it is a great mistake to suppose that it is not to them also very injurious. Indeed, being possessed with the delusion that they have constitutions “like a horse,” and can endure anything, they frequently prolong the exertion till a sudden and complete prostration proves what a fearful, often irreparable, injury they have been doing to their boasted constitutions.

Definition of Health. — See HEALTH, DEFINITION OF.

Deformities and Distortions (*Lat. deform'is*, misshapen; from *de*, from, *forma*, shape; *distortus*, twisted; from *dis*, apart; *tortus*, twisted, from *torqueo*, I twist).—Deformity of the person may be classed under two principal heads: malformation and distortion. The former is, for the most part, congenital, and is usually characterized by the deficiency or redundancy of parts, or by imperfections and irregularities of structure. The latter, arising generally after birth, comprises all permanent deviations from the natural shape or position which are effected by the influence of external or internal force in parts originally soft and flexible, or such as have acquired unnatural pliancy by accident or disease. It is to the latter class of deformities only that our attention need be directed.

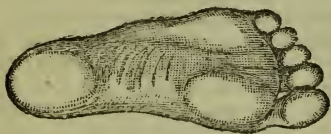
(1) Every part of the body capable of independent motion is furnished with two sets of muscles, acting in contrary directions, the purpose of which is obviously to bring the part back to its place after movement in either direction. In the position of equilibrium, these muscles are not in a state of absolute relaxation, even during sleep; on the contrary, they continue to act with considerable energy, each exactly counterbalancing the other. This is called their tone, or tension, and it is calculated to give great steadiness to the parts thus held at rest between opposite forces. But if one set of the muscles should be suddenly cut across, the tension of their antagonists still remaining in action, the consequence would be a movement in obedience to the latter till the contraction had reached its limit; and the part in question would permanently retain the position into which it had thus been moved. The same effect would result if the muscle, instead of being divided, were paralyzed by the interruption of its nervous communication with the brain. Again, if the tone of one muscle were increased by spasm, or otherwise, so as to give it a decided preponderance over its antagonist, the result would be similar. These considerations will sufficiently explain the nature of one large class of distortions, namely, those which result from affections of the *brain*, *muscles*, and *nerves*. The names given to these distortions are; hemiplegia, or drawn mouth; strabismus, or squinting; hysteric contractions, wry neck, and club foot (*which see*). The list of distortions depending on a morbid condition of the muscular or nervous functions might easily be extended.

(2) But by far the most common and important class of these affections is that which originates in disease of the bones.

The firmness and rigidity of the bones depends upon the due proportion of the earthy matter, phosphate of lime, that enters into their composition. If the proportion of this ingredient be too great, as in old age, and in the disease called *fragilitas ossium*, they become brittle, and are broken by the slightest causes; if it be too small,

they become unnaturally pliant, and are distorted by the pressure of the superincumbent weight, or the contraction of the muscles. The principal distortions and deformities arising from disease and weakness of the bones are rachitis, or rickets; curvature of the spine, lateral and angular; and knock-knee. Diseases of a similar kind frequently occur in the bones and joints of other parts of the body; they require similar treatment, and are followed by analogous consolidations and distortions.

Rheumatism, and other disorders, and even common inflammations occurring in a high degree within the joints or in their neighbourhood, occasionally produce like effects.



NATURAL FOOT.



DEFORMED FOOT.

(3) Distortions are sometimes occasioned by the contraction of other parts than those which are concerned in motion.

(4) Another class of distortions may arise from external pressure; as of the bones and cartilages of the chest from tight stays; or of the phalanges of the toes from ill-made shoes. Instances of this kind of distortion must be familiar to all, and call for no particular explanation or remark.

Delicate Health in Women.—The following remarks are made by Dr. Bull, in his "Hints to Mothers," upon the serious and fatal effect which marriage frequently exercises upon the young woman of delicate health:—

"It is true, and experience justifies the

statement, that this event now and then seems to produce a most beneficial and salutary influence upon the constitution of such an individual; it becomes invigorated by it, and, pregnancy occurring, established. In the majority of cases, however, the result is far otherwise. And how many instances, if we look around, may we number of young female friends who, after a first or second child-bearing, have sunk rapidly into the grave! Now, how is this? In what consists the difference in the two cases? I believe it to be just this, that where health becomes improved by marriage, the frame, although delicate, is free from disease or from a predisposition to it—the organs of the body are sound; but in the other case (and this is the example of the larger class) a consumptive tendency, more or less strong, exists, and marriage in such depresses the vital powers, permanently weakens the frame, and thus develops, more or less rapidly, this most fearful and most destructive malady; and life is thus cut short, which, had not marriage taken place, might, by a watchful and vigilant care, have been prolonged for many years. It is most important that parents should be fully aware of these facts—of the fatal influence of the married life on such a state of constitution—that they may do all they can to dissuade those who are so circumstanced from an alliance which can be productive only of misery. I know it will be said that cases occur in which child-bearing would seem to have a decidedly contrary effect, and to arrest the progress of consumption; that a woman having decided consumptive symptoms shall fall pregnant, and such symptoms shall directly abate, and, by-and-by seem almost to disappear; and, year after year, she shall go on bearing children, and as long as she does so her original disorder shall be kept in abeyance. Immediately, however, this condition ceases, the consumptive symptoms again appear, and perhaps quickly terminate life. It is very true that striking instances of this kind occur now and then; but extensive observation will prove these to be exceptions to the general rule.

"Where children are known to inherit a disposition to consumption, although they may be in the enjoyment of apparently good health, they should be prevented, if possible, from allying themselves with such as are in the same predicament; for when both parents are strumous, their children will, in all probability, be doubly so. How much misery and suffering is thus inflicted on the offspring, which, humanly speaking, might be prevented by a prudent avoidance of such ill-assorted marriages!"

Delirium Tremens, Cause of
(*Lat.* delirium, madness; from *de*, from; *lira*, furrow—the wandering from the furrow in ploughing; being applied figuratively to wandering of mind; *tremens*, trembling).

—Delirium tremens is, in almost every case, the consequence of excessive indulgence in drinking, the trivial name of tremens being given to it from the nervous trembling of the voluntary muscles which accompanies it, keeping the eyes, hands, and other parts, in constant motion, which, however, is only a part of that universal agitation and restlessness which characterizes the disorder, and distinguishes it in a great degree from insanity, which it otherwise greatly resembles. It is designated by many, very appropriately, brandy fever, from its usual exciting cause; and, from the violent disturbance of the mental powers, it is, at other times, called brain fever. There may be said to be two varieties of delirium tremens: one of spontaneous origin after prolonged drinking; the other coming on as the result of an accident to those who are habitual drinkers, without being drunkards. The cause is almost invariably excessive spirit-drinking. The other kind of delirium tremens is not unfrequently seen in brewers' draymen, who might be looked upon as splendid specimens of men; yet if they meet with any accident, they are very liable to a kind of delirium which adds considerably to the risk from their injury.

Delirium Tremens, Symptoms
of.—The malady consists inevitably of hal-

lucinations and trembling of different parts of the body. The chief symptoms are sleeplessness and restlessness, with delirium generally busy, but not very violent. The objects seen are very often loathsome creeping things, rats and serpents and the like, in the existence of which the patient fully believes. When hearing is affected, and that is generally the case, he hears people calling him names, taking away his character, and so on. He will not rest in bed, and is constantly getting up, but will lie down again quietly if told to do so. As to his physical condition, the face is usually pale and wild-looking, the skin moist and clammy, the tongue coated and tremulous, and the pulse quick and soft. There is complete loss of appetite, and the bowels are generally confused. During the night he is worse than during the day. This does not last long: if spirits are abstained from, the condition ordinarily ends in eight-and-forty or two-and-seventy hours, in profound sleep, from which the patient wakes weak, but in his right mind, and ordinarily very repentant. Occasionally the condition terminates fatally; if so, the temperature rises and he gets no sleep; feebleness increases till the delirium is muttering merely, and death commonly comes in weak convulsions.

Delirium Tremens, Treatment
of.—In the treatment of delirium tremens, the strength of the patient is the great thing to look to. If that is good, all should go well. If the attack comes on after a bouse of six or eight days, during which the patient has eaten nothing, or but little, the first thing is to get him to take food. If stimulants are necessary, the aromatic spirit of ammonia and spirit of chloroform will be found best. With these precautions—giving, too, a little brandy, if necessary—the patient will do well enough for eight-and-forty hours, very miserable, it may be, but in no risk whatever. At the end of that time, his bowels having been well opened in the interval, let him have a good dose of morphia subcutaneously, half a grain or so, and be put

quietly to bed. Tipplers, if they have had a debauch after a long course of habitual drinking, make perhaps the worst patients. Their appetite and digestive powers are completely gone, and they have no reserve of strength; very likely they have had one or two attacks previously, but disregarded them. Such must be handled with care; their strength must be kept up, and stimulants of any or every kind given if necessary, and the critical period must be watched for with care. If it come, then opium in full dose; or if it do not come, opium or chloral must still be given to try to bring it on. It is in such cases that the injection of morphia under the skin is of most manifest benefit. If the temperature go up, cold must be applied, best, perhaps, in the form of the tub-pack; but if the head is very hot and the face flushed, the shower bath may be tried, or perhaps what is better, ice applied while the rest of the body is packed. But nourishment must be given hour by hour, or even less, or the patient may sink. The other variety is comparatively mild; a little extra drink may have induced an attack of the horrors. For this, perhaps, the best remedy is a good emetic and purge, or a good long walk.

Dentine.—See CEMENTUM.

Dentition, Second.—See TEETHING, SECOND DENTITION.

Denture, Artificial.—See TEETH, ARTIFICIAL.

Deodorizer (*Lat. de*, negative; *o'dor*, smell).—A deodorizer merely masks or destroys the bad odour without reaching the true spirit of evil. Its action is not strictly on the putrid product, but merely on the sense of smell, which it blunts to the action of the offensive vapour. During the Middle Ages, when the plague, black death, sweating sickness, and pestilential fevers desolated the cities of Europe, immense importance was attached to the use of perfumes as protectives against contagion; and fumigations, with costly spices, volatile oils, and rich-

smelling oriental drugs, were largely used in the houses of the rich; but with no good effect.

Deodorizer, A Good.—A pound of sulphate of iron (copperas), dissolved in two quarts of water, is an excellent deodorizer, and has no disagreeable smell. Pour a little of the mixture into the vessels after washing them, and keep it in them. The mixture will stain towels.

Deposit of Fat.—See FAT, DEPOSIT OF.

Derbyshire Neck, A Cause of.—See SPRING WATER.

Derma, or True Skin.—See COR-IUM.

Dermatitis Calorica.—See SUN-BURN.

Deterioration of Brain and Nerve Structure.—See BRAIN AND NERVE STRUCTURE, DETERIORATION OF.

Devonshire Colic (*Gr. kolikos*, pertaining to bowels; from *kolon*, great intestine).—This disease, which is attended with severe griping pain in the the bowels, was at one time common among the cider-drinkers of Devonshire. Its cause was long unsuspected. Among painters, especially those engaged in working white or red lead, and who are not exceedingly cleanly in their habits, the disease is of frequent occurrence.

Devonshire Colic, Symptoms of.—One way or another lead is introduced into the system; by-and-by a blue line forms on the gums, and the sufferer begins to be tormented with obstinate constipation and colic. If the poison continues to be absorbed, paralysis of the muscles of the forearm, which act on the back of the hand, follows, giving rise to what is technically known as dropped wrist. If the influence of the poison continues, the muscles waste, and paralysis may extend to other parts of

the body. The signs of lead colic resemble those of ordinary colic, but the pain is more severe, more twisting in character, and more persistent. The constipation, too, is very obstinate, and it is not very easy to get the bowels to act at first.

Devonshire Colic, Treatment of.

—The best way to effect the action of the bowels is by giving full doses of Epsom salts and Glauber's salts, mixed—a couple of drachms each—repeated every two hours till the bowels are moved. Sulphate of magnesia (Epsom salts) and dilute sulphuric acid, in the form of a purgative lemonade, should be continued for a time, until the bowels begin to act more comfortably. As soon as the bowels have been freely moved, it is advisable to set about removing the lead which has been absorbed and deposited in the system. For this, iodide of potassium in full doses—ten grains or so—should be given, and continued for a considerable length of time, so as thoroughly to remove all traces of lead from the system. The application of electricity to the bowels has often been found useful, but it is more valuable as an application to the wasted and stiffened muscles of the forearm.

Diabetes (*Gr.* diabetes, a running through; from *dia*, through; *baino*, I go).—Diabetes is a considerable discharge of urine, for the most part excessive, having a faint apple smell and sweet taste, and attended with great thirst and general debility.

The quantity of urine evacuated by diabetic patients is generally profuse, and, in some instances, has amounted to the astonishing increase of sixteen or even thirty quarts in twenty-four hours.

The distinguishing sign of diabetes is the presence of sugar in the urine. Every excessive urinal flow unaccompanied by this symptom belongs to, or forms, a different complaint, and is very generally the consequence of some nervous disorder, or of a simple relaxation of the uriniferous tubes.

Diabetes, Causes of.—This disease

is occasionally to be met with in early life, but generally occurs at a more advanced period, especially in constitutions broken down by intemperance. The predisposing and exciting causes are chiefly such as debilitate the general system, as the abuse of spirituous liquors, cold applied to the body, immoderate evacuations, crude unwholesome diet, and the excessive use of mercury. It is at present a moot point whether the liver or the blood is at fault in this disease, nor is it yet settled what part the nervous system may play in this affliction, but it is an ascertained fact that irritation in certain parts of the brain will produce sugar in the urine. The kidneys are not the seat of mischief; they merely allow the sugary urine to pass, and in so doing suffer more or less in the process.

Diabetes, Symptoms of.—It often makes its approach insidiously, and may arise to a considerable degree, and exist for some weeks without being particularly attended to. It is attended generally with a most voracious appetite; an insatiable thirst; a dry, harsh skin; a clammy tongue; a sense of weight, or even acute pain in the loins; and frequently with a hay-like scent or odour issuing from the body. The kidneys discharge a fluid usually very limpid and large in quantity, though sometimes tinged with green, like a diluted mixture of honey and water, and possessing a sweet taste more or less powerful; the pulse is quicker than in health; the flesh wastes rapidly; and, in a very advanced stage of the disease the feet and legs swell, and the skin becomes cold and damp. A troublesome costiveness frequently attends, and sometimes an affection of the lungs.

Diabetes, Treatment of.—The treatment of diabetes generally consists in placing the patient upon a diet from which all starchy or saccharine articles of food are, as far as possible, excluded. Brown bread, bran biscuits, meat, green vegetables and milk, etc., may be allowed, but ordinary bread, sugar, rice, potatoes, etc., are pro-

hibited. Since there is so much thirst, a large allowance of water must be given—as much, in fact, as the patient likes to take. Raw meat has been found beneficial in some cases. Various preparations, as diabetic-biscuit and diabetic-bread have been recommended, but few can continue their use long, as they eventually tire of keeping to a restricted diet.

Diameter of Hair.—See HAIR, DIAMETER OF.

Diaper, Use of the.—The use of the diaper, which the nice regard of mothers to cleanliness would not readily forego, has unquestionably a tendency to deform the lower limbs of an infant, and many of the worst crooked legs are owing to it. If not entirely dispensed with, its use need not be prolonged beyond a very few months of infancy, until, in fact, the natural instincts of the child are made, as they can be easily at a very early period, to assume the form of regular habits. The diaper, moreover, when used, should be very loosely adapted to the child, so as not to bind the thigh and prevent the free action of its muscles.

Diaphoretic Cooling Draught.
—See DRAUGHTS.

Diaphragm, or Midriff (*Gr.* *diaphragma*, a wall of partition; from *dia*, completely; *phrasso*, I divide. *A.-S.* *midd*, middle; *hrif*, entrails).—The diaphragm, called also the midriff, is a thin muscular partition, between the chest and the abdomen, extending crosswise through the body, and is attached by its margin to the spine, to the lower ribs on each side, and, in front, to the sternum, or breast bone. It separates the respiratory organs from those of digestion, or rather, the heart and lungs from the stomach, liver, spleen, etc. The diaphragm rises upward within the chest, so as to form an arch, the lungs resting upon its upper surface, while the stomach and liver accommodate themselves to the

concavity of its lower surface. It is perforated by the *œsophagus*, or food-pipe, which passes to the stomach, and by several other important tubes, among which are the great aorta and ascending vena cava.

The diaphragm is the principal agent in producing the act of respiration. Every time we breathe this organ contracts, by which means it descends from its arched shape to that of a *plane*, or level surface, pushing down the stomach and liver with it. This enlarges the cavity of the chest, while the lungs, which rest upon its upper surface, follow it in its descent, allowing those organs to expand, and thereby causing a vacuum within them which is immediately filled by air, which rushes in through the trachea and bronchial tubes, filling up the air-cells. This is called *inspiration*. The diaphragm then immediately becomes relaxed (unless prevented by the will as in “holding the breath”), and is pushed up by the organs beneath it, assuming its arched shape again, thus diminishing the size of the chest, which compresses the lungs and causes the air within them to be pressed out or expelled. This is termed *expiration*. An enlargement of the chest, therefore, is accompanied with inspiration, and a contraction of it with expiration. In the first the diaphragm contracts and becomes a *plane*; in the other it relaxes, and is pushed up by the abdominal viscera beneath it. What we call breathing, therefore, is performed entirely on the principle of the blacksmith’s bellows, the operation of which is familiar to most persons. There are several of the muscles of the ribs which assist in expanding and contracting the chest, and consequently in respiration.

Diarrhœa (*Gr.* *diarrhœa*, a flowing through; from *dia*, through; *rheo*, I flow).—Diarrhœa and dysentery occur at all seasons and in all climates, but are more common within the tropics, and elsewhere more frequent in hot seasons.

A brief consideration of the morbid processes which characterize these affections of the bowel, and the causes that give rise to them, will serve to explain their greater fre-

quency in hot weather and in hot climates. Our knowledge of the diseases will, however, be gained with less difficulty if it is sought in connection with some general acquaintance with the anatomical structure of the bowels, and their physiological action in health.

The bowel (or intestine) consists of a membranous tube about twenty-five feet in length, and of varying diameter; its upper or narrower portion, about twenty feet in length, is called the small intestine; its lower portion, which is of much greater diameter, and about five feet in length, the large intestine. It is capable of contracting when empty, and of very great distension by its contents, particularly under some conditions of disease. The large and small intestines are each divided into parts, which are rather of convenience for anatomical description than based upon anatomical differences of structure. The whole lies coiled up in the cavity of the belly, at various points attached directly to the posterior wall of the cavity, and to other organs, but in the main supported by a membranous fold of the peritoneum (*mesentery*), which encircles the bowel, forming its outer layer, and passes back, to be attached to the parts in the neighbourhood of the backbone, thus allowing a certain amount of freedom of motion to the bowels in the cavity in which they lie. The upper end of the bowel is given off directly from the stomach. This great tube is very far from being a simple membranous canal. It consists of three layers, one outside the other, held together by delicate sheets of membranous tissue. There are, first, the outer layer (*serous*), spoken of above; secondly, the muscular layer, consisting of fibres encircling the tube, and others running lengthwise; and, third, the mucous layer, which is innermost, and constitutes the lining of the tube. This is richly supplied with glands of various kinds. It is thrown up into innumerable folds, which vastly increase its extent of surface; and it is penetrated almost to its surface by fine blood-vessels and absorbent vessels, the walls of which reach so near the free surface as to be, in many places, only covered by a

thin layer of the cells (*epithelia*) which cover the mucous membrane. This surface presents, besides the folds spoken of above, innumerable minute projections (*villi*), which give it a velvety appearance; they contain the finest twigs of the lacteal, or absorbent vessels. Between the muscular and mucous layers are placed the nerves of the bowels and the blood-vessels, which constitute an extremely rich and fine network. At a distance of nearly four inches from its upper end the common tube which conveys the fluids secreted by the liver (the bile) and by the pancreas, or sweetbread (the pancreatic juice), the two great digestive glands of the body, enters the bowel.

The function of the bowel is much more than a mere mechanical one. The processes of digestion, begun so actively in the stomach, are here continued. And it is through the walls of the intestines, by means of the lacteal vessels contained in the villi, and the walls of the blood-vessels which so closely approach the surface, that the absorption of the digested food-substances takes place. In order that absorption may take place, the processes of digestion must prepare the food. Putrefactive decomposition, with the production of excess of gas, is prevented by the bile, which aids also in converting part of the fat into a soapy solution, and which, by its presence, otherwise aids in the digestion of fats. The pancreatic juice converts starchy substances into sugar with energy, and, like the bile, digests the fatty portions of the food; the juices secreted by the intestinal glands possess a feeble digestive power, but are endowed with the property of dissolving various principles of the food (fibrin, albumen), and of converting cane-sugar into grape-sugar. No portion of the food can be absorbed except in complete solution, and the juice of the bowel not only effects this solution by the various chemical processes just spoken of, but they also supply the amount of fluid necessary for the purpose. During digestion these juices are secreted and re-absorbed with marvellous energy, and in enormous amounts. But the food eaten is not all capable of complete

digestion; much is insoluble, inert, mere bulk, and incapable of supplying the wants of the body. This must be moved inwards to be ultimately expelled. This is the function of the muscular coat of the bowel. The encircling fibres contract from above downwards, in waves which sweep the contents of the bowel before them—a process in which the longitudinal fibres aid. This is called the vermicular or worm-like motion of the bowel. These fibres belong to the muscular system of organic life, and their action is not under the control of the will. They contract under the influence of locally acting causes—as, for example, the distension of the intestinal tubes by partially digested food, and the like; and, being independent of the brain, they have a supply of minute nerve-centres (*ganglia*) of their own. The processes above described take place most actively in the small intestine; but absorption still goes on in the large intestine, as is shown by the facts that the bowel contents, hitherto fluid, here lose moisture, and begin to solidify, and that nutritious and medicinal substances introduced into the bowel disappear, and produce constitutional effects.

It is very important to bear in mind that the walls of the blood-vessels lie so near the surface of the mucous membrane, that the absorption of some of the dissolved food-substances takes place by simple diffusion through them; for if fluid, under the ordinary circumstances of health, can thus enter the blood, it is not difficult to understand that it may, under circumstances of disease, pass in the opposite direction out of the blood-vessel into the bowel.

The morbid processes which give rise to diarrhœa may consist of an intensification of the healthy physiological processes—such as increased action of the mucous coat, by which the fluid contents of the small intestine are too rapidly hurried on, or an excess of the secretions of the liver, or pancreas, or of the intestinal glands themselves, giving rise to an amount of fluid too great to be readily absorbed, or incapable of absorption by reason of alterations in its character, or

the passage of the watery portions of the blood into the cavity of the bowel, such as have been above spoken of; or, on the other hand, diarrhœa may be due to an arrest of the function of absorption; or these conditions may be, as is probably most frequently the case, variously combined.

The abundant blood-supply of the bowels, their great functional activity, the elaborateness of their organization, and the complexity of the processes taking place in them, render them extremely liable to functional and to inflammatory derangements, both primary—that is, having their cause in the intestines themselves; and secondary—that is, dependent on disorders of other organs, or diseases of distant parts of the body.

Diarrhœa is a symptom of disease, rather than a disease itself. In the simplest form of diarrhœa the symptom constitutes the chief, if not, indeed, the only manifestation of illness both to the patient and the doctor, and with a relief of the diarrhœa a cure is established.

Diarrhœa, Causes of.—Exposure to cold not infrequently gives rise to diarrhœa by driving the blood from the surface of the body to the internal organs, thus producing in the bowel an excess of blood (congestion) which is relieved by the escape of the watery parts into the bowel, and an increased production of fluid by the intestinal glands. The affection known as “cold,” or “catching cold,” sometimes manifests itself as a diarrhœa; and “a cold in the head” is not infrequently attended by slight transient diarrhœa, particularly as it is passing off.

Exposure to intense heat may also occasion diarrhœa, which is then probably due to some disturbance of the nervous system. The abrupt alternations of hot day temperatures with cool night temperatures is particularly apt to produce it. Over-exertion is likewise not an infrequent cause. Malarial influences are often concerned in the production of diarrhœa, which may then be of an intermittent type. And in this connection are to be mentioned a numerous

group of diarrhœas, due to the inhalation of sewer-gases, the emanations from cesspools, from decaying animal and vegetable substances, the accumulations of filth about ill-kept yards and dwellings, and the like causes which abound in hot weather, which are very destructive to health, and which are entirely within the control of man. Such atmospheric influences, even when powerless in themselves to originate disease, are active in keeping it up. We once saw several cases of simple diarrhœa of a most obstinate character in one wing of a hotel at the sea-side, which was evidently kept up by the emanation from privies so situated that the prevailing winds blew over them into this part of the house. Elsewhere in the hotel similar cases recovered in a few days, and all the cases in question at last promptly got well, some on being transferred to the main part of the hotel, others on being sent elsewhere.

The drinking of water contaminated by similar substances is a cause of diarrhœa not to be overlooked. Diarrhœa is often attributed to change of water by those travelling, when it is, in fact, due to other causes—errors of diet, exhaustion, and the disarrangement of the regular habits of life.

Children and young infants are especially prone to affections of this kind, particularly when teething, and in summer.

But the most common cause of diarrhœa is defective or arrested digestion, especially that part of the whole process which goes on in the intestines. The diarrhœa which follows imprudence in eating, both in the quality and quantity of the food, is familiar to every one. Particular articles of diet will always cause the disorder in some individuals. Articles capable of producing chemical or mechanical irritation of the delicately organized lining membrane of the bowels will give rise to diarrhœa. Coarse, indigestible articles of food, unripe fruit, or fruits containing indigestible seeds or the acid or sub-acid fruits in excess, and large amounts of coarse vegetables, containing much fibrous matter, may be enumerated among these. When the digestion is en-

feebled, as it is during the heats of summer, or when the intestines are unduly sensitive, the ordinary food, or even a restricted diet, may be the cause of the trouble. In some cases the accumulation and retention of hardened masses in the bowel occasions diarrhœa by their acting as a mechanical irritant, just as coins, rings, and the like, when accidentally swallowed, may occasion similar trouble, which usually forthwith subsides as soon as they are voided. This is true of most of the simplest forms of diarrhœa. As soon as the offending substance, the irritant, is voided, the trouble to which it has given rise ceases, unless inflammation has resulted, in which case the diarrhœa may continue, but with a tendency to ultimate recovery.

Diarrhœa is a symptom of various constitutional states and diseases; among these, general debility from various causes, from deprivation of food, from too long continued nursing, may be mentioned; so, also, congestions of the liver and other organs, the last stages of consumption and of some forms of Bright's disease of the kidneys. For the last of these, it is not to be incautiously checked, as by this means the tissue-waste, which the diseased kidneys are no longer able to discharge from the body, is got rid of.

Diarrhœa in Pregnancy.—Although much less frequently met with in the pregnant female than constipation, diarrhœa is nevertheless occasionally an accompaniment of this condition, and if very severe and allowed to go unchecked, it may lead to miscarriage.

When diarrhœa thus attacks the pregnant female, attention should at once be directed to the diet, and only those things taken which are mild and unirritating. The quantity of food taken should not be large. Of those articles of diet suitable in such cases, milk must be placed first. It may be given either alone, or with rice, sago, arrowroot, or tapioca. When the irritation has partly subsided, some chicken tea may be given, or an egg lightly boiled. Later on a piece of chicken

with bread may be given with advantage, and gradually the ordinary diet be resumed.

Should the diarrhœa be of the kind mentioned as occurring with an overloaded state of the bowels, a different line of treatment must, of course, be adopted. It would be useless endeavouring to check the diarrhœa in such a case so long as the cause which gave rise to it remained in operation, so that the first thing which requires to be done is to have the bowels thoroughly cleared out by means of an aperient. For this purpose nothing will answer better than a dose of castor oil along with fifteen or twenty drops of laudanum, or an enema of soap and water. When the bowels have in this way been relieved, the diarrhœa will generally be found to cease of itself.

The diet should be mild and unstimulating, and all irritating articles of food must be carefully avoided. When from the state of the tongue the stomach appears to be deranged, a few powders of rhubarb and magnesia will prove useful. No attack of diarrhœa should be passed over lightly by the pregnant female; and if it is not checked by careful regulation of the diet, and by the administration of such articles as we have mentioned, medical assistance must be sought. During the continuance of diarrhœa warmth is very essential, and for this purpose flannel should be worn next the skin. A flannel roller wound round the abdomen will answer well. The feet also must be attended to and kept warm.

Diarrhœa, Symptoms of.—Pain is usually present, often of a colicky nature, and relieved by an action of the bowels. It is apt to be more or less constant, with tenderness when there is actual inflammation (*enteritis*), in which case fever is present. Diarrhœa is occasionally unattended by pain of any kind. The movements of this bowel may vary in number from three or four in the twenty-four hours to twenty or more, and their character is not less variable than their number. If the attack be due to acute indigestion, vomiting may be present; it does not, however, as a rule occur.

Diarrhœa, Treatment of.—It is of the utmost importance in every case of diarrhœa to ascertain and correct the cause promptly; also the diarrhœa itself if it do not shortly cease. The heat of summer, the direct action of the sun, the suddenness of temperature changes, and the diminished protection afforded against them, exhaustion and fatigue, enter largely as factors in the production of summer diarrhœa. Many things at other times harmless act as exciting causes when we are tired and used up. The management of a simple case of diarrhœa demands the consideration of four points:—(1) The removal of the cause; (2) Repose of the body; (3) Bland nourishment; (4) Medicine, if required.

(1) After what has been said concerning the cause, it is only necessary to add that if there be offending material, such as undigested food, etc., still retained in the bowel and acting as an irritant, it must be got rid of. To this end, mild laxatives are employed, as a tablespoonful of castor oil, with laudanum (from 1 or 2 to 15 or 20 drops, according to the age of the patient and the urgency of the distress), or citrate of magnesia.

(2) Just as fatigue has a large influence in causing diarrhœa, so over-exertion is baneful in keeping it up.

Fortunately, the greatest number of the cases of summer diarrhœa in adults are of a simple character, and cease upon the removal or avoidance of the cause, which is, as a rule, not difficult to discover. It is very important that those prone to affections of the digestive organs should learn to recognise the special exciting causes in their own cases, and so avoid them. If it be cold, or the abruptness of temperature changes, a light flannel bandage under the merino underwear of summer should be used, and exposure to draughts of air carefully shunned, especially when fatigue exerts its depressing influences; if the change of water, a dash of ginger may avert trouble; if the danger lurks in certain craved-for dishes, fortitude may take a lesson from not forgotten pangs; if in foulness and stench, refuge must be taken in flight to purer haunts.

Diarrhœa, Homœopathic Treatment of.—For this disorder, when accompanied by great pain in the stomach and bowels, watery stools, and exhaustion, *Arsenicum* is required; when caused by drinking cold water when heated, *Bryonia*; for griping pains and indications of dysentery, *Mercurius*; when caused by indigestion and indulgence in rich food and pastry, *Pulsatilla*. For diarrhœa in children, *Camomilla* is a useful remedy. *Dose.*—One drop of the tincture in one tablespoonful of water to be given after each evacuation as it occurs.

Diet, Abernethy on.—See ABERNETHY ON DIET.

Diet after Delivery (*Fr. diète; Lat. diæta; Gr. diaita*, means of living).—For the first two days after confinement the diet should be for the most part fluid, and may consist of a basin of bread and milk for breakfast, or a cup of tea or coffee, with toast; a basin of good beef-tea, with bread-crumbs or toast, may be taken for dinner. Tea may be again taken in the afternoon, along with bread or toast, as may be preferred; and for supper the patient may take a basin of arrowroot and milk. A lightly boiled egg is a very nourishing article of diet, and will rarely be productive of harm, however soon after confinement it may be given. It must on no account be boiled hard, as it then becomes much less digestible. It is preferably taken at breakfast-time.

This diet may be slightly varied; thus, instead of giving exactly the same on the second day as on the first, some sago and milk, or rice and milk, may be given, along with the beef-tea for dinner. On the third day a piece of chicken may be given at dinner-time, or a piece of white fish, such as sole or haddock. On the fourth day, provided everything has been going on well, the patient may be allowed a mutton-chop, or piece of steak, or roast beef, of which, however, she must not partake too freely. After

this date she may return to her ordinary diet, care being taken at the same time to avoid everything of an indigestible nature, such as pastry-stuffs, salted meat, pork, veal, etc.; only those articles being taken which she knows to be nourishing and easy of digestion.

Owing to the absence of active exercise at this period, the stomach is unable to digest heavy meals of solid food; hence the necessity there is of keeping the diet plain and light, while, at the same time, of a kind sufficiently nourishing. Light puddings may be given; they are wholesome and easy of digestion.

Diet during Disease.—In disease strict attention to the diet is of the greatest consequence, and although the physician is generally careful to attend particularly to this, and give his instructions regarding it, nevertheless the carrying out of the details is left to those in charge of the sick. Generally the physician, in giving instructions with regard to the diet of the patient, mentions certain classes of food which he considers suitable to the case, and to the stage at which the disease has arrived, thus leaving some latitude for those who are in attendance upon the sick to vary the particular article from time to time.

The quantity of food given in disease should be carefully regulated, and the quality ought in every case to be above suspicion. An egg whose taste suggests, to the patient's mind, anything akin to badness, may do him much harm by partaking of it, and besides, may give him such a dislike to that article of diet as may deprive him of its nutritive properties during the rest of his illness, and so it ought to be a rule that none but perfectly fresh eggs be admitted into the sick-room. The more recently laid the eggs are, the better, and none that have been kept by processes of varnishing, etc., to prevent their becoming bad, should ever be used.

The hours of taking food should also be carefully regulated, and as far as possible these should coincide with his ordinary

meal-times during health. In active disease all solid nutriment and that which is stimulating in its nature had better be withheld from the patient after five o'clock in the afternoon; as towards night he becomes feverish and restless, and if food that has a stimulating effect is given, or the stomach called into greater activity by solid food being given it to digest, the state of vascular excitement to which digestion gives rise produces a physiological fever to be superadded to the one from which he is already suffering. Therefore, let it be a rule that only fluid food be given during the evening, and towards the approach of night, and let this be of as light and unstimulating a character as possible, lest the patient's symptoms be aggravated, and harm result. When a patient is suffering from difficulty of breathing, solid food given at night has a tendency to augment it, and so should be avoided.

Of course, should the necessities of any particular case demand a different line of treatment than that which we have recommended, or should the medical attendant have given directions at variance with those which are here laid down, regard must not be paid to what is intended to be of general application, but the physician's instructions be minutely obeyed. In every instance the physician should direct the diet of the patient, ordering those things which he considers necessary and best adapted to the nature of the case, and he should also regulate the quantities to be given at one time and the hours best suited for giving the patient nourishment. Some cases require that nourishment be given more frequently and in smaller quantities at a time than others, hence the necessity of careful regulation on the part of the physician, and the scrupulous carrying out of every detail by those who are in charge of the patient. The effect of the different articles of diet should be watched by those in attendance, and the result communicated to the physician. In this way much valuable information may be given, which will doubtless prove serviceable in the management of the case.

Another point to which attention should be directed is to any desire which may be expressed by the patient in regard to special articles of diet. These requests should not be ignored; frequently nature, in disease, is the best judge; and, at any rate, whatever wish has been expressed by the patient should be carefully noted and communicated to the medical attendant, who will endeavour, as far as possible, to comply with it. It is quite possible that things may be asked for which, if given, would prove injurious to the patient. This daily happens in the case of children, and if parents were to accede to their request without consulting with the physician, much harm might result in consequence. Caution therefore is needed on the part of the attendants to distinguish between a real desire and a mere whimsical crave, the gratifying of which might prove most injurious to the patient.

When any article of diet causes the patient disgust, we must not insist upon its repetition. Vegetable soups, when made for the sick-room, should not be loaded with ingredients; the patient's stomach can rarely stand soups of this description, and they are apt to create a disagreeable loathing towards a kind of nourishment which, if properly made, is very valuable, both during disease and convalescence. As to the merits of different articles of food, we have spoken in a preceding chapter.

The importance of bringing the art of cookery to bear upon the treatment of disease having of late years been recognised, and the great benefit that has arisen to patients in consequence, render a few remarks upon the subject necessary here, although for anything like details some of the works devoted to the subject must be consulted. To be able to present a dish to an invalid in an enticing form, and so prepared that the stomach shall be relieved of as much labour as possible, is by no means the smallest blessing that cookery bestows upon the patient. Nor should attention to these things be deemed undeserving of our consideration, nor anything that conduces to his recovery, however apparently insignifi-

cant, be regarded as trivial. The cookery employed in the sick-room should be of the simplest and most unpretentious kind.

A few recipes of those preparations which are in frequent use in the sick-room will be found in this volume. For these, *see* ARROWROOT MUCILAGE, BEEF (ESSENCE OF), BEEF TEA, BREAD PANADA, CHICKEN TEA, GRIT GRUEL, GROUND RICE MILK, ICELAND MOSS JELLY, IRISH MOSS JELLY, MUTTON TEA, OATMEAL GRUEL, SAGO, TAPIOCA, TOUS LES MOIS, and VEAL TEA.

For beverages suitable for the sick-room *see* BARLEY WATER, EGG BRANDY, LINSEED TEA, MILK AND SODA WATER, RENNET WHEY, SAGO POSSET, TOAST WATER, WHITE WINE WHEY.

Diet, Fish as.—When the digestive powers are still feeble, and have not yet regained their former tone, and when the system is unable to stand the greater vascular excitement which accompanies the digestion of meat, fish forms a very nice article of diet. Fish is easy of digestion, and creates little vascular excitement, and consequently forms a light and wholesome article of diet for the invalid. It answers very well during the transition from fluid food to a meat diet. Only rock and flat fish, such as whittings, soles, turbot, haddock, cod, and flounders, should be employed in the sick-room. Eels, herrings, mackerel, trout, and salmon, being more heating in their nature, although more nourishing articles of diet, are not so well adapted to the invalid as those already mentioned. Fish ought simply to be boiled, as in that condition it suits the patient best, being more easily digested than when fried or cooked in any other way. Oysters, being easy of digestion, may be given to the invalid, but crabs, lobsters, and other shell-fish should not be admitted into the sick-room.

Diet, Full.—*See* FULL DIET.

Diet, Generous.—*See* GENEROUS DIET.

M. D.

Diet in Athletic Training.—*See* ATHLETIC TRAINING, DIET IN.

Diet in Convalescence.—When the period of active disease is over, and that of convalescence takes its place, the patient is able to advance to something more substantial in the way of diet than the preparations that have just been mentioned. He is now in a condition to benefit from puddings of a farinaceous character, and animal food that is non-stimulatory and easy of digestion. Care must, however, be taken not to advance to these articles of diet too rapidly, lest the stomach should be overtaxed and the patient suffer relapse. By easy gradations let the food approach in character the ordinary diet of health.

The following recipes, giving the preparation of the more ordinarily employed articles of diet during the period of convalescence, will be found in this volume.—*See* ARROWROOT, BLANCMANGE, ARROWROOT PUDDING, BATTER PUDDING, BOILED BREAD PUDDING, BOILED FLOUR AND MILK, CHICKEN BROTH, MACARONI PUDDING, MASHED CARROTS AND TURNIPS, MUTTON BROTH WITH VEGETABLES, OATMEAL PORRIDGE, RICE AND APPLES, RICE AND GRAVY, SAGO MILK, SIMPLE RICE PUDDING, TAPIOCA PUDDING, TRIPE, VERMICELLI, OR MACARONI SOUP, WATER SOUCHY.

Diet in Homœopathy.—In homœopathy strict attention to diet is required, and unquestionably this is most helpful in the treatment of all diseases, and in some ailments of a minor kind sufficient to effect a cure although this is deemed by homœopathic practitioners, who assert that attention to diet can never be effectual in effecting a cure, but is useful in allowing the full curative action of the medicine given. It is almost needless to add that close attention to diet is necessary only during treatment, though it is at all times desirable for every one, whether man, woman, or child, to be temperate and prudent, both in eating and drinking, if they desire to keep in good health.

Diet, Jebb on.—*See* JEBB ON DIET.

Diet, Low.—*See* LOW DIET.

Diet, Mixed, Lancaster on.—*See* VEGETARIAN DIET.

Diet Modified by Age.—*See* AGE, DIET MODIFIED BY.

Diet of Adults.—*See* ADULTS, DIET OF.

Diet of Brain Workers.—*See* BRAIN WORKERS, DIET OF.

Diet of Children.—*See* CHILDREN, DIET OF.

Diet of Children and Adults.—The principal difference between the diet of adults and that supplied by Nature for the young consists in the fact that the diet of the adult contains less water, and is seasoned with more or less of the group of accessory foods.

Diet, Poor.—*See* POOR DIET.

Diet, Prudent Council respecting.—There is no better established law of physiology than that the habit of concentrating the attention of the mind upon the action of any organ of the body is fatal to the proper performance of its functions. The stomach is peculiarly sensitive to this mental watchfulness, and, like a shy pupil, always blunders in its work when under the too close supervision of its master. There is more harm done to the stomach by the over-anxious, with their constant fear of injuring it, than by the reckless, with all their audacious disregard of danger. Many a person has spoiled his digestion by the very means by which he has striven to keep it in good condition. On the other hand, there are not a few who, having done apparently their best to destroy, have succeeded in preserving it unimpaired. It must

not be inferred, however, that recklessness in eating and drinking is more favourable to health than prudence. Physiology commands us to obey certain laws of diet, and requires and indicates the manner of obedience. It is essential to comply with both.

The daily food and drink of every person should be in accordance with the well-known principles of healthful diet. The habit should be established, and never swerved from, of living properly, so that no one, as he takes his seat at the table and prepares to satisfy his appetite, need be distracted from the fulness of its enjoyment by any vexatious questions. He should not be forced to set up a debate in his own mind as to the digestibility of every bit of bread he breaks, or of each plate of meat set before him. It matters not how wholesome may be the article of diet, no stomach will digest it easily if its operations are disturbed by distracting doubts of their efficiency. Physiology has a ready explanation of this undoubted fact. Mental anxiety of all kinds weakens the nervous power, and, while lowering the general tone of the body, diminishes especially the power of digestion. The brain, moreover, is at the same time inordinately active, and reserves the force of nervous energy and draws the blood to itself at the very moment the stomach chiefly requires its full supply of both. The easy, unquestioning consumer of his food is the most likely to digest it well.

Diet, Sydney Smith on.—*See* SYDNEY SMITH ON DIET.

Diet, Vegetarian.—*See* VEGETARIAN DIET.

Dietaries, Public.—*See* PUBLIC DIETARIES.

Dietary, Banting's.—*See* BANTING'S DIETARY.

Diffusion of Odours.—*See* SENSE OF SMELL.

Digestibility of Foods (*Lat.* digestibilis, capable of being digested; from *digestus*, disposed; from *digero*; from *di*, apart; and *gero*, I carry).—Much of our exact knowledge respecting the digestibility of various aliments is derived from observations upon a Canadian named Alexis St. Martin, who had a hole shot through his side into his stomach, which healed at the edges without closing up entirely, so that the process of digestion could be watched in all its stages without difficulty. St. Martin was taken into the service of Dr. Beaumont, who made many observations on the interior of the stomach, and on the effects on food introduced through the opening. Other cases of a similar kind have afforded opportunities for more recent experiments; so, in addition to the tables derived from Dr. Beaumont's experiments, we have added one from Dr. Chambers.

RELATIVE DIGESTIBILITY OF VEGETABLE SUBSTANCES.

Articles of Diet.	How Cooked.	Time of Chymification.	
		H.	M.
Rice	Boiled .	1	0
Apples (sweet and mellow)	Raw .	1	30
Sago	Boiled .	1	45
Tapioca	Boiled .	2	0
Barley	Boiled .	2	0
Apples (sour and mellow)	Raw .	2	0
Cabbage (with vinegar)	Raw .	2	0
Beans	Boiled .	2	30
Sponge Cake	Baked .	2	30
Parsnips	Boiled .	2	30
Potatoes	Roasted .	2	30
Potatoes	Baked .	2	33
Apple Dumpling	Boiled .	3	0
Indian Corn Cake	Baked .	3	0
Indian Corn Bread	Baked .	3	15
Carrots	Boiled .	3	15
Wheaten Bread	Baked .	3	30
Potatoes	Boiled .	3	30
Turnips	Boiled .	3	30
Beets	Boiled .	3	45
Cabbage	Boiled .	4	0

RELATIVE DIGESTIBILITY OF ANIMAL SUBSTANCES.

Articles of Diet.	How Cooked.	Time of Chymification.	
		H.	M.
Pigs' Feet (soused)	Boiled . . .	1	0
Tripe (soused)	Boiled . . .	1	0
Eggs (whipped)	Raw . . .	1	30
Salmon Trout	Boiled . . .	1	30
Venison Steak	Boiled . . .	1	30
Brains	Boiled . . .	1	45
Ox Liver	Boiled . . .	2	0
Cod fish (cured dry)	Boiled . . .	2	0
Eggs	Roasted . . .	2	15
Turkey	Boiled . . .	2	25
Gelatine	Boiled . . .	2	30
Goose	Roasted . . .	2	30
Pig (Suckling)	Roasted . . .	2	30
Lamb	Boiled . . .	2	30
Chicken	Fricasseed .	2	45
Beef	Boiled . . .	2	45
Beef	Roasted . . .	3	0
Mutton	Boiled . . .	3	0
Mutton	Roasted . . .	3	15
Oysters	Stewed . . .	3	30
Cheese	Raw . . .	3	30
Eggs	Hard Boiled	3	30
Eggs	Fried . . .	3	30
Beef	Fried . . .	4	0
Fowls	Boiled . . .	4	0
Fowls	Roasted . . .	4	0
Ducks	Roasted . . .	4	0
Cartilage	Boiled . . .	4	15
Pork	Roasted . . .	5	15
Tendon	Boiled . . .	5	30

Digestibility, Precedence of Foods in.—See PRECEDENCE OF FOODS IN DIGESTIBILITY.

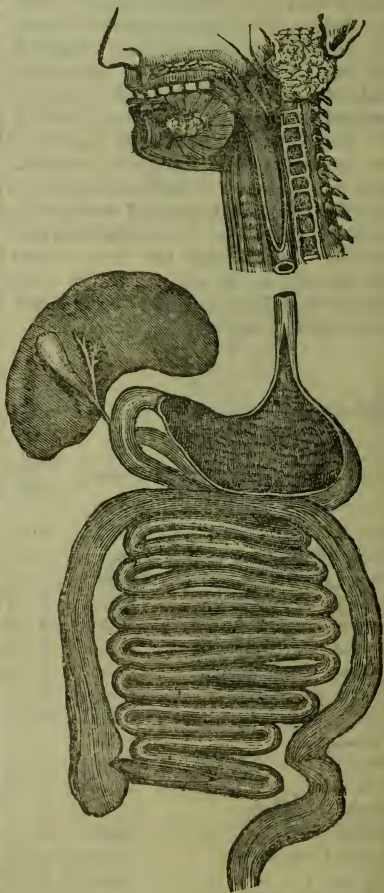
Digestion and Condition of Body.—That the digestibility of food depends much upon the condition of the body in various ways—as, for instance, in regard to exercise—was very curiously shown by Hunter's famous experiment of feeding two dogs equally and taking one out to run after a hare, whilst the other was allowed to lie down and sleep. At the end of an hour

both were killed when the food in the first dog's stomach was found almost unaltered, but that in the second dog was nearly digested, and most of it had passed out into the bowels. From this experiment it may be asserted that active exercise is not favourable to digestion, and that therefore no violent exercise should be taken after a full meal; and *vice versa*.

Digestion, How Accomplished.

—To make the process of digestion simple, let us say that it begins in the stomach and ends in the lungs. To return to the illustration we made use of in a preceding paragraph—suppose a man to swallow a mouthful of bread. We follow it from his mouth, down through the *œsophagus* to his stomach. It now, by a peculiar motion of the muscles of the stomach, is moved about in the stomach, and as it touches here and there, gastric juice starts out, like sweat upon the forehead, and wets the bread. After a couple of hours of revolving about within the stomach, the bread is changed into something which looks like butter-milk. This is *chyme*. Now the gate at the right end of the stomach opens and lets this *chyme* pass through into the first part of the intestine. Then two new liquids are poured in, one from the liver—the *bile*; the other from the pancreas—the *pancreatic juice*. These induce certain changes in the liquid bread which make it resemble milk. Now it is known as *chyle*. Innumerable little mouths, which open within the intestine, suck up this milk or *chyle*, carry it to a small canal—the *thoracic duct*—which lies upon the backbone, and through this canal it runs up to the upper part of the chest, and is poured into a large vein just under the left collarbone. Through this vein it reaches the right side of the heart, and is then forced into the lungs, where it comes in contact with the air. Now a wonderful change comes over it. This is produced by the addition of oxygen to the milk-like fluid. For a given quantity of this *chyle* a still larger quantity of oxygen is added, and the compound which comes of this union be-

tween the bread and the oxygen is the nutriment which supplies the wants of the system. What takes place in the lungs is more important than anything that precedes it in the process of digestion.



ORGANS OF DIGESTION.

Digestion, Preparations for.—

The mouth has been defined as an irregular cavity which contains the organs of taste

and mastication. While the food is in the mouth, we have direct control over it; but as soon as the food leaves the mouth, it passes beyond our control. It is of no use to say to a man after dinner, "Digest your food well"; for he has no direct control over anything in the alimentary canal below his throat. But, while the food is in the mouth it is entirely under his control, and he may contribute more than most people imagine to the completeness of the great digestive function.

Now, it happens that the human stomach cannot digest starch, and yet a large percentage of our food consists of starch. We all know how much starch there is in the potato, in bread, and so in various other articles of food.

If, for example, a potato could be introduced into the stomach without passing through the mouth, the stomach would find it most unmanageable. But if it can only remain a few moments in the mouth, and with the assistance of the teeth be ground into a paste and thoroughly saturated with the saliva, the starch, of which it so largely consists, will undergo, through the agency of the saliva, a change which will make the subsequent steps in the digestive process easy. That change, it will surprise some people, who have not studied it, to learn, is one from starch to sugar. The saliva contains a remarkable ingredient known as *ptyaline*. The *ptyaline* comprises one-200th part of the saliva. This extraordinary agent has the magical power of changing the starch of the food into sugar, and then the potato is completely prepared for the subsequent steps in digestion.

Whoever has taken a mass of wheat into the mouth has experienced a very pleasing illustration of this change of starch into sugar. When the wheat is first crushed in the mouth, it is sticky, and has the starch taste, but almost instantly it becomes sweet. In this brief moment the saliva has changed the starch into sugar.

Digestion, Theories of.—Hippocrates thought digestion was a process of

stewing; and for a long time after him it was regarded as a *cooking* effected by the heat of the stomach.

Again, among the old physiologists digestion was considered a *fermentation*. They referred to the gas frequently escaping from the stomach as proof.

Next, digestion was believed to be a *putrefaction*.

Another set of physiologists imagined that *trituration* accounted for everything. They pointed to the gizzard of the fowl. There, said they, you see the process of digestion in its most perfect form, and in the human stomach we find various muscles to churn or triturate the food.

The next theory of digestion was the *chemical*. This school of physiologists maintained that the juices of the stomach dissolved the food chemically, and that if the chemical juices be pumped out, and united with the food, precisely the same changes will take place without as within the stomach. While this statement is not correct, there is much truth in the chemical theory of digestion. It was the largest stride yet made towards the light in the pursuit of this important physiological problem.

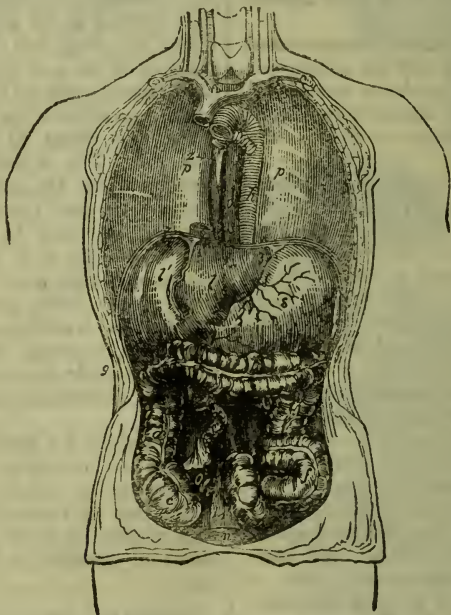
It is perhaps not altogether modest that we, although occupying a higher point in the progress of this investigation, should declare that we know all, but there cannot be a shadow of doubt that the present theory of digestion is the true and final one.

Digestion, Thinking and.—See THINKING AND DIGESTION.

Digestion, True Theory of.—Digestion is a vital process to which chemical and mechanical forces contribute. While the motion of the walls of the stomach is necessary to mingle its contents, and while the chemical solvency of the gastric juice is indispensable, both of these combined cannot produce the true chyme. That chyme, into which every kind of food is transformed, can be produced nowhere

outside of the stomach. In this respect chyme is like other products of the body. We may learn all the constituents of the saliva or the bile; we can produce neither of them outside of the body. That mysterious force which we call *vital* is the force which determines all. Chemistry and mechanics play their part, but the all-determining, guiding and controlling power is the *life principle*.

ascending colon; *t*, the transverse; *d*, the descending colon; *f*, the sigmoid flexure, *v*, the appendix vermiformis; *r*, the rectum; *n*, the bladder; *g*, the gall bladder; *k*, the spleen; *l*, *l'*, the liver; *e*, the stomach; 1—2, the falciform ligament which forms the line of separation between the right and left lobes of the liver; 1, the coronary ligament; 3, the left lateral ligament with which the coronary ligament is continuous along the



THE VISCERA OF THE THORAX AND ABDOMEN.

Digestive Organs.—These are the mouth, teeth, salivary glands, pharynx, œsophagus, stomach, intestines, liver, pancreas, spleen, lacteals, and thoracic duct. For a description of each of these organs in detail, see under the name assigned to each as above. A front view of the viscera of the thorax and abdomen is given in the above figure: *p*, the pleuræ covering the lungs; *o*, the thoracic portion of the œsophagus; *z*, the vena azygos; *h*, the thoracic aorta; *a*, the

posterior border; *c*, the cæcum; *i*, the termination of the ileum in the large intestine; *j*, the duodenum; *m*, the mesentery, or fold of peritoneum which supports the convolutions of the intestine.

Digestive Process, Influence of Saliva on.—See SALIVA, INFLUENCE OF, ON DIGESTIVE PROCESS.

Dill.—This plant resembles fennel in

general appearance and in the shape of its flowers, which are umbelliferous, and its seeds. These are aromatic, but find little employment for culinary purposes in Europe. They are used however, for medicinal purposes, and a preparation known as dill-water is made from them, which is a carminative, and is given to young children suffering from pain in the stomach induced by flatulence.

Dill Water.—*See* MEDICINES, HOME.

Dine, When to.—The often-asked question, whether it is better to dine at the middle of the day or in the evening, must be answered by the circumstances and occupations of the individual.

It is of importance that the principal meal of the day should be taken leisurely, and without harassment; and if the hour of leisure that is required for a comfortable meal cannot be found in the middle of the day, it is better to wait till later. In this respect, present customs are just about what they should be. Many business men in large cities dine at six or seven o'clock, for the twofold reason that the middle of the day is their busiest time, and because they are so far from home that they must take their meals in restaurants. In the olden time, when business was carried on quietly and on a small scale, and merchants lived above their offices and warehouses, it was easy and natural to dine early; but, under the new dispensation, the custom has been necessarily abandoned. In the country, where toil is easier and calmer, and where they rise so early that twelve o'clock is about as late as four or five is for the residents of the city, where they go to bed with the chickens, and where, furthermore, there is little comparatively to harass the mind, in the morning, at noonday, or at night, it would be absurd, and to many injurious, to postpone the principal meal much beyond midday.

It is always well for the busy man, who has hurried home to his dinner, to pause a quarter of an hour or so before sitting down to it. Excessive fatigue is not favourable to

digestion. The delay occasioned by, as well as the refreshment obtained from, a careful performance of one's toilet, is a good preliminary. The want of punctuality of many housekeepers is often a cause of irritation, by which the appetite, as well as the digestion, of the hungriest and healthiest is spoiled. The half-hour before dinner, while the guests are only occupied with thoughts of it, is said to be the longest in the whole day; and if the time is by any chance protracted, there is nothing so trying to the mortal patience, and well calculated to engender irritability and those other unamiable states of mind which are particularly unfavourable to the health of the stomach.

"A man's body and his mind are like a jerkin and a jerkin's lining; rumple the one, you rumple the other." This physiological fact, thus applied and humorously illustrated by Sterne, is very apparent in the mutual influence of digestion and mental emotion. Both brain and stomach must be free from any mutual disturbance, for either to perform its functions properly. Cheerfulness of mind is as essential to a good digestion as a good digestion is essential to cheerfulness of mind. When the stomach is performing its duties, any excessive action of the brain is sure to interrupt them. A state of gentle and pleasurable excitement of the mind is, however, favourable to digestion. "Chatted food," according to the old proverb, "is half digested." With the sociability of a mixed dinner company, which a well-regulated household ordinarily supplies, there is just the degree of mutual liveliness most favourable to the performance of every bodily function, and especially digestion. Solitary dining, then, should be always avoided.

The lengthening out of the dinner, by its division into several courses, provided each is not devoured as voraciously as if it were the only one, but the appetite is fairly apportioned among the whole, is favourable to enjoyment and health. The opportunity is thus afforded of interlarding the meal, during its necessary pauses, with that pleasant discourse which promotes cheerfulness and

favours digestion. It is well to point out that a cheerful spirit covers a multitude of sins. He who takes his meals joyously, even though he eat forbidden fruit, will be more edified thereby than he whose food fulfils every requirement of chemistry, but is swallowed in disgust or apprehension. The life of a man who honestly strives to fulfil every jot and tittle of an arbitrary gospel of health, at all hazards and at absolute cost, is very apt to be exceedingly dreary. To the physical exhaustion and pain that result from insufficient nutrition is frequently added the greater agony of a worried conscience.

Dining-Room.—A writer in the *Medical Examiner* has laid down that "the dining-room should be kept cool and well ventilated; otherwise the blood is drawn away from the stomach to the surface-capillaries, while an extra strain is put upon the lungs by the respiration of vitiated air. The light in the room should not be so brilliant as to over-excite the nervous system. A subdued light of a reddish shade is perhaps the most pleasant to dine in, red being believed to have the most enlivening effect on the sensorium. Flowers and scents, and even the splash of water, or the sound of distant music, are important accessories to the ideal dinner, but are not absolutely necessary to a healthy meal. Lastly, pleasant converse is, perhaps, the most important condition for securing the requisite mental altitude. We would venture to say that no solitary dinner can be a perfectly healthy one; but even that is, perhaps, better than forced or uncongenial conversation. Many an indigestion, we fancy, has owed its origin to an unresponsive neighbour. Hence the importance of carefully sorting dinner-guests, and of avoiding the general monotony of home-dinners by a frequent addition of external elements. When we think of how many factors are necessary to make up a successful dinner, we must almost despair of ever being able to obtain them all together. In this as in other matters man is the slave of circumstances; but by thought

and care he may approach near to the ideal, and all who have succeeded in doing this will admit that the result has been worth all the trouble spent upon it."

Dining-Room, Furniture for.—

All really essential to a dining-room are a solid extension table of oak or walnut, a small sideboard of either material, a suitable number of chairs, and a stand for the convenience of the waiter while serving. The floor should never be carpeted, but inlaid or painted, and the hangings of the windows should be of a kind to serve merely as shades in case of necessity, and never of heavy drapery, which is sure to hinder ventilation, and reek with all the odours of the smoking-hot dinner. Some neutral colour, of not too dark a tone, should adorn the walls, and their uniformity may be broken by cheerful pictures or prints. A gentleman who made an art classification of his own into the æsthetic and dietetic, and included Kaulbach's drawing of Lotta cutting the loaf and the engraving of Rembrandt's jollification with his bride among the latter, hung them both up, not inappropriately, in his dining-room. The chief requisite for the place in which the daily repasts are taken are convenience, brightness, neatness, and cleanliness, and these are more likely to be secured, with their accompanying moral influences, by a simple construction and arrangement.

Diphtheria (*Gr. diphthera*, piece of skin or leather).—Diphtheria is considered to be a poisoning of the blood, and is generally due to bad draining either of the houses or the neighbourhood. It is accompanied with the formation of membrane on the mucus surfaces. Diphtheria seems to have been known for the last two thousand years, and under various names it has prevailed with great severity in different countries. It has often been confounded with croup and scarlet fever, and it was not until recent epidemics that this disease has been fully and generally recognised. In the four years, 1859-62, the number of deaths registered from diphtheria was 21,219; of these, 11,229 were males, and 12,990 were females,

showing that in the latter sex it is more fatal than in the former. Half of these deaths occurred in the first five years of childhood. Children and young people are more exposed to it than adults, and more girls suffer from it than boys; in like manner women are more liable to it than men, and the weakly of either sex are more prone to the disease than the strong and healthy. Climate and season do not seem to exercise any influence on this disorder; it occurs with equal severity in the winter as in the summer months, and in its symptoms and mortality it is the same in hot as in cold countries; yet various epidemics differ in severity and in extent. The French call this disease diphtherite, and in 1859 the name diphtheria was first applied to it in the Registrar-General's returns, and has now become a well-known and established term.

It is quite clear that this complaint is contagious, but in what way is not so manifest. The infectious matter is capable of diffusion in the air and conveyance to distant parts, but it is more common for people who inhale the patient's breath, or who come in close contact with the sufferer, to suffer most. No atmospheric condition is known which tends to favour the spread or check the progress of the disease; it is very doubtful if the disease can be taken from one house to another by an unaffected person, but the presence of one sick person in a house is sufficient for its communication to another, although the two may be kept as separate as possible. As in most epidemics, the mortality is greatest at the outset, and this is probably due to the most weakly and most susceptible being attacked first. Although every care be taken to cleanse and purify an apartment, yet the infection will sometimes cling to it with remarkable tenacity. In a country house in Scotland a visitor suffered from this disease while occupying a chamber in which a case of diphtheria had occurred eleven months before.

The time between exposure to the disease and the first appearance of the disorder varies very much; in some cases the period

has been only thirty hours, in others several days elapse. Two children were taken from an infected house and removed to a village where no similar case had appeared; one child had symptoms of the disease on the third day, being apparently quite well in the interval, and another person going from that village to nurse her sister in the infected house fell ill four days afterwards. In another house a servant was taken ill with this disease, and remained there a month until she was quite well; the house was then well cleansed and ventilated, and remained empty for ten days. At the end of that time the family returned, and three weeks afterwards the baby was attacked, and then the other inmates in turn. The infection may be disseminated for some time after convalescence has been established. There seems to be a predisposition on the part of some people to take this disease more readily than others. Those who are highly nervous or have undergone much mental activity, and those who have suffered from exhaustion or bodily fatigue, are more liable than others. The disease seems to attack indifferently all classes of society.

Diphtheria, Symptoms of.—The disease begins, like so many others, with a feeling of general depression and feverishness; there is what seems like a cold in the head, a hoarseness, slight difficulty of swallowing, stiffness of the neck, and swelling of the glands about the throat; when this swelling occurs, send for the doctor, without waiting for other symptoms than those given. White patches on the tonsils and back part of the throat will follow if diphtheria is really present.

Diphtheria, Treatment of.—On suspicion of the disease, isolate the patient and keep him in bed. Allow no one to come into the room except one attendant. Keep the thermometer at 65°–70°. If possible, light a fire, put the window down at the top two inches or more, and keep it so day and night. Send for chlorate of potash and dissolve as much as you can in a

tumbler of tepid water, to be freely used as a gargle. Have some strong beef-tea prepared at once, and, until it is ready, give the patient as much milk with the white of an egg in it as he will drink, in the proportion of one egg to half a pint. These precautions will probably save the patient from more severe sore-throat if his trouble is not really diphtheria; and should this alarming disease have overtaken him, you will have done all that you can without further instructions. "From the moment," says an American authority, "that you receive the doctor's orders in a case of diphtheria, carry them out as if life depended on you alone. Never relax your efforts to give medicine, food and stimulants, no matter how hopeless the attempt seems to you, and do not be betrayed into carelessness by what you think an abatement of the symptoms." Use every precaution against the spread of the contagion.

Discharges from the mouth will probably be excessive; clear them away as quickly as possible, using only soft rags, which can be destroyed. Wash the lips and chin, which are touched by the discharge with the chlorate of potash now and then. Keep them covered with vaseline or a little oil; examine the skin everywhere, and if broken or chafed, treat in the same way. The membrane is liable to form wherever the skin is broken. Throw all soiled rags directly into the fire, if there is one in the patient's room; if there is none, put them in a covered jar or pail in which there is an ounce of chloride of lime and a gallon of water; let them soak until they can be carried away in the jar and burned in the open air.

The treatment of diphtheria consists in general means and local measures. There is no drug which can be looked upon as a specific, nor are there any means in our power to eliminate the disease when once it has attacked an individual, yet a great deal may be done at the onset if the disease is recognised sufficiently early. As a local remedy, a solution of nitrate of silver should be thoroughly applied to the diseased sur-

face of the throat, but not forcibly so as to rub off the membrane and cause bleeding to follow. Hydrochloric acid and honey have been used for a similar purpose.

By way of nourishment give only concentrated food: beef-essence; custard, made thin enough to drink; one egg to half a tumbler of milk beaten up, and uncooked; coffee, with plenty of milk, etc. Nourishing enemata will be ordered if necessary. Give the food once an hour, and oftener if the strength is failing. The doctor will direct this; ask him about it. If brandy is ordered, give it in milk; that is so much more nourishment supplied. Wine whey can be freely taken if stimulants are allowed, and, given cold, it is very refreshing.

If the atomiser is to be used for throwing spray into the mouth and nose, hold it at a distance if the patient is a child, until he becomes a little accustomed to it. The child can inhale vapour, when asleep even, through a large funnel held near the face, the small end being fitted over the spout of a kettle in which the steam is generated.

Diphtheria, Treatment of, in Convalescence.—In convalescence the care is not to be relaxed; the patient is not to leave his bed for any purpose, or even to sit up in it till the doctor has given permission. Paralysis of the heart may result from want of care in this matter. Sudden deaths in convalescence from diphtheria are not uncommon.

The food may be gradually changed as the patient improves. When meat is allowed, cut it small; the throat and the power to swallow are affected for a long time afterwards—in some cases by partial paralysis.

The nurse must protect herself by not inhaling the patient's breath, or running risks from the sudden coughing-up of mucus or membrane; she must have nourishing food and sufficient rest. After recovery, disinfect and clean the room thoroughly.

Dirt, Cleanliness and. — See CLEANLINESS AND DIRT.

Disadvantages of Restaurants.

—See RESTAURANTS, DISADVANTAGES OF.

Discoloured Marks on Skin, Removal of.—See FRECKLES, REMOVAL OF.

Discovery of Circulation of the Blood.—See BLOOD, CIRCULATION OF THE.

Disease, Causes of (*Lat.* *dis*, not; *A.-S.* *eath*, gentle; *ead*, prosperity; *Lat.* *otium*, ease; *Fr.* *aise*, ease).—Manifestly one of the first steps towards avoiding or escaping the maladies which shorten our lives, and inflict upon us that greatest earthly evil, physical pain, must be to form some acquaintance with the causes of disease and their modes of operation. Causes of disease are any of the innumerable external influences which act upon our bodies, so that they can disturb the natural condition of our organs, or the balance of the functions which they perform. Therefore, excess or privation of the air we breathe, or of the water we drink, and the food we eat, their impurity, or partial decomposition, as well as variations in the direction of superabundance or deficiency of the light, the heat, and the electricity which modify the nutrition of our bodies may, and constantly do, all become potent causes of disease.

Just as the captain of an ocean steamship, in order to bring his charge safely into port, must carefully study his charts, and be prepared to avoid rocks, quicksands, and dangerous currents which menace the security of his costly vessel, so every one of us, if we would navigate our craft into the haven of long life and health, needs all the knowledge which can be acquired in regard to dangers imminent, upon the right hand and the left, of our voyage of life, from accident and disease.

Such knowledge of our ever-watchful enemies may be obtained in two ways—one by venturing into their haunts and testing their powers upon our own bodies, and the other by trusting to the accounts of our neighbours, and, according to the sagacious

proverb, making “other men’s shipwreck our landmarks.” Now it is difficult to believe that there can be two opinions among sensible people as to the relative wisdom of these diverse methods of sailing our ships through the storms of life; and yet experience proves that a large majority of mankind has, in every age of the world, preferred to try dangerous coasts and currents for themselves, instead of steering in the well-known track of comparative safety. Few among us, no doubt, have failed to feel and to yield to this seductive temptation of finding out for ourselves how great the danger is, and whether after all the fear of hearts more cowardly than our own has not exaggerated its perils. How often, too, are we lured on to venture a trial of strength or endurance by the egotistic opinion that we, of all men, can see the evil consequences in time to turn aside, or, if necessary, draw back and avoid them! Sometimes this can, in fact, be done, and it will be accomplished with a frequency nearly in proportion to the exactness of our knowledge of the strength, power, and habits of the enemies we have to encounter, and the places where they are liable to be met.

Hence the brief account of the causes of disease which we propose to set down here will, we trust, be useful to both classes of individuals—to the wise, by pointing out to them the most approved methods of giving disease-producing influences a wide berth; and, to the adventurous, by teaching them how to keep a bright look-out for breakers ahead, if they will steer out of a safe course, and how best to sheer off in time with as little injury as possible.—See also HEAT, COLD, STATE OF ATMOSPHERE, RACE AND TEMPERAMENT, IDIOSYNCRASIES, AGE AND HEREDITARY TENDENCIES.

Disease, Changes in Treatment of.—Disease follows the great law of evolution, and, as humanity moves onward, some of the more virulent and fatal inflammations and affections grow milder and milder, and perhaps entirely disappear; while others, especially of the nervous variety, increase and multiply. The changes in the treatment

of disease follow closely on the changes of diseases themselves. That the frequent and abundant blood-lettings and purgings, and the starvation diet of the last generation were always harmful, no careful student of history or of medicine will claim; rather it is to be believed that they were, on the average, as successful as human skill could fairly be expected to be; but the physician who should now systematically treat his patients by these methods would be tried for manslaughter. Where formerly medical men reduced, they now sustain; where formerly they prescribed purgatives and fasting, they now prescribe tonics and feasting; and in thus changing their practice with the changes in diseases they do wisely and well.

Disease, Early Stages of.—The early stages of any disease are not under the observation of a physician, and yet are of great importance. A loss of appetite, a feeling of general lassitude, flushing of the face, and wandering pains in the back and limbs, sore throat, sleeplessness; in short, anything unusual in the appearance or feelings should excite attention. Neglect of these seeming trifles may make the difference between an unimportant indisposition and a serious illness. Therefore, on the first appearance of such symptoms, it is well to enforce rest, a long morning sleep, followed by a tepid sponge-bath, and some light nourishment before dressing for the day. The simplest food should be eaten, and not much of that. No exercise should be taken, but as much fresh air as possible, by night and by day, should be secured, and in all cases the patient should occupy a bed alone. It will generally be perfectly safe to give two grains of quinine in twelve hours. The bowels should be regulated if constipated by a simple enema of warm soap-suds. After a day or two of such treatment, should there be no improvement, send for the doctor; you have probably done all that he would have ordered so far.

Disease, Hippocrates' Mode of Preventing.—In the following paragraphs

we have what constitute the more salient features of the instructions of Hippocrates upon the prevention of disease. He says:—"In the winter, to resist the cold, let your food be dry and warming. In the spring, when the weather grows milder, the diet should be accommodated to the season, and should be somewhat cooler and lighter. In summer, when the season becomes hot and dry, the food should be cool and the drink diluting. But after the autumnal equinox, your aliment should again be of a warming nature, and your clothes thicker by degrees as you approach the winter.

"It is of great moment to a man's health whether his common bread be white or brown, well or ill baked.

"It is very injurious to health to take in more food than the condition will bear, when at the same time one uses no exercise to carry off this excess.

"A variety of foods, discordant in their nature, should not be indulged in at one meal, because they make a disturbance and create wind in the bowels.

"If they who have been accustomed to one meal a day should chance to eat two, they soon grow dull, heavy, and thirsty.

"Excess in drinking is not quite so bad as excess in eating.

"When the body is impure or loaded with humours, the more you nourish it, the more you hurt it.

"Mutton is good food for the delicate and for the robust.

"Milk is hurtful to those whose bowels are subject to flatulency, or grumbling, and to those who complain of thirst, but good for the consumptive and emaciated, if they are free from fever and the above-named derangement of the digestive apparatus.

"The healthy and strong may drink such water as comes in their way indiscriminately, but they who drink water for the recovery of health must be careful in the choice they make. The lightest, purest, and softest waters are most fit for those who are apt to be costive, whereas the hardest waters do most service to those whose bowels are moist and phlegmatic. Hot temperaments

receive benefit from drinking water. Water-drinkers generally have keen appetites."

Disease, Indications of. — See HEALTH AND DISEASE, INDICATIONS OF.

Disease, Milk and.—See MILK AND DISEASE.

Disease, Periodical Changes in.—See PERIODICAL CHANGES IN DISEASE.

Disease, Predisposition to.—See PREDISPOSITION TO DISEASE.

Disease, Signs of, in Children.
—To be able to distinguish disease in a child from some mere transitory ailment forms a most important part of the work of those who have the care and upbringing of children entrusted to them. To be sending for the physician when there is nothing the matter with the child, and refrain from so doing when the child is seriously ill, are mistakes which are at present of daily occurrence. Better far, however, that the former should take place than that a grave disease should be neglected, and the patient suffer in consequence.

There are, fortunately, marks by which the observant mind may be able to distinguish between the one and the other; but when there is any doubt existing in the mind, we should urge the necessity of calling in the aid of the physician. By so doing all unnecessary delay is avoided, and if the disease is serious, it will be all the better for the patient that it has been taken in time.

When any serious illness is impending in a child, he is generally noticed to be out of sorts for some time; he is observed to be restless and irritable; his sleep becomes disturbed; he may awake with a scream; occasional muscular twitchings may also be observed. The child becomes dull and listless; he has no inclination to join with his brothers and sisters in their sports; he will remain motionless for a long time, only following them in their amusements with his eyes; his features are those of an aged

person. The appetite also becomes capricious, or may be altogether lost. When these symptoms are observed coming gradually upon a child, no time should be lost in seeking advice, as in all probability something of a serious nature is impending.

Besides the foregoing symptoms, there are others which shall be noticed more in detail hereafter, the presence of which give valuable information, not only as to the fact of impending serious disease, but also with regard to the part of the body affected. Now the importance of information of this kind in the case of children who are able to express their feelings to those round about them only very imperfectly, if at all, must be apparent to every one. The expression of countenance, the voice, the movements, are all carefully studied by the physician, and employed by him in diagnosing the diseases of infancy and childhood, and to the unskilled a knowledge of some of these under the modifying influence of disease may prove useful. We shall consider those signs of disease which may be derived from—

1. *The Condition of the Body.*—If a child that has been plump and well begins to lose flesh, and is noticed day by day to become more wasted, in all probability there is something serious threatening the child. The production of emaciation is associated in the popular mind with various affections; thus worms, teething, diarrhoea, and growth are all supposed to give rise to emaciation. With regard to the first, although undoubtedly a cause of emaciation sometimes when present in large numbers, they certainly do not give rise to it with anything like the frequency with which they are credited. Should worms, however, be observed in the motions, means should be employed to get rid of them as soon as possible. Another frequently supposed cause of emaciation in children is dentition, but this can only be attributed as a cause when its existence is evident, and when, instead of going on naturally, it is accomplished irregularly, and in a tumultuous manner. Brain diseases, as is well known to physi-

cians, generally manifest themselves by emaciation: and unless this fact is borne in mind, the coming on of a serious disease may be overlooked, and much valuable time be lost in consequence. Another cause of emaciation is jealousy on the part of a child. Anything that might lead to this developing itself in one member of a family towards another should be carefully guarded against by those who are entrusted with their upbringing.

2. *Altered Demeanour.*—When a child that was bright and happy is observed to become listless and morose, careless in regard to everything that formerly gave it happiness, unwilling to join its brothers and sisters in their play, and sitting silently watching them in a half-interested sort of way, depend upon it there is something seriously wrong. A child when in health is bright and active, seldom at rest for any length of time unless when asleep, and when this natural activity, which is a sure sign of health, ceases, the cause should be at once inquired into, and should the parent be unable to give herself a satisfactory explanation, no time should be wasted in sending for advice. It has been remarked that a child indisposed is a grumbling child; that one suffering from disease is dejected. There is much truth in this, and indeed it has deep root in the popular mind; for it is always looked upon as a favourable sign when a child that has been passing through a serious illness begins to grumble and be dissatisfied with its surroundings. The child that is really ill is dull and morose; he is seldom heard grumbling about and raging at everything; he takes little notice of what is going on round about him, and has quite an aged and almost ludicrously serious expression of countenance.

3. *The Cry.*—From the cry of a child much valuable information may be derived. By observation, both parent and physician are able to distinguish the difference between the cry of hunger and that of pain. The cry of a child in pain is peculiarly sharp and sudden, while that of a hungry child is generally preceded by a series of grunts,

and is accompanied by the turning of the head from side to side, and by certain movements of the mouth as if searching for the breast.

4. *Pain.*—When a child is suffering from pain in any part of the body, the pain is accompanied by certain external manifestations which not only render its existence apparent, but which point to the locality from which it arises; thus pain in the abdomen causes a child alternately to draw up its legs and straighten them again, the fists remaining, meanwhile, clenched. The features become more or less contracted, and the child cries while the pain lasts; so that if the pain is spasmodic in its nature, there will be periods of crying followed by intervals of complete rest. When the child is suffering from inflammation of the lungs, it cries at the time of coughing, and for some little time after. When the child is suffering from pleurisy, every effort at coughing gives rise to pain. When a child is suffering from brain disease, the cry is very significant—it takes the character of a sudden shriek. In general uneasiness the cry is of an irritable nature, and ceases when soothing treatment has been adopted.

When the nurse is convinced that the child is suffering pain, she should try to ascertain in which of the three great cavities of the body the pain is located—the abdomen, chest, or head. Pain in the bowels is accompanied by wriggling of the body, drawing up of the legs, clenching of the fists, and generally occurs before or after a movement. In inflammation of the lungs or air passages, the cry is at the time of coughing, and for a little time after. In pleurisy the child experiences sharp pain on coughing, or on any movement of the body. With pain in the head, which comes from disease of the brain, the child gives a single sudden shriek. Little children often suffer very severe pain from earache, will cry loud and long, and cannot be comforted. There is also the irritable cry of general uneasiness, which may generally be quieted by soothing treatment.

5. *Expression of the Face.*—The expres-

sion of the face varies somewhat in different diseases. In diseases of the stomach and bowels there is apt to be paleness and contraction about the mouth; the nostrils often dilate with each inspiration in diseases of the chest; in diseases of the brain the eyes and upper part of the face are more apt to be affected; but in severe pain in any locality the whole face is likely to express it by its contortions.

6. *Posture and Movements.*—The positions which the child seems naturally to take should be noticed, whether it lies on the side or on the back, whether it seems to prefer to have the head elevated, whether it keeps the head quietly in one position, or turns it restlessly from side to side, or is inclined to burrow in the pillow. The hand is frequently carried to the head in headache or earache, and to the mouth when the teeth are giving pain.

7. *Skin.*—The temperature and colour of the skin, its dryness or moisture, its smoothness, or the presence of any roughness or swelling, are points which may indicate health or disease.

8. *Appearance of Face.*—The appearance of the face is often expressive of the diseases of childhood, and different parts of the face are affected according to the seat of the disease. Thus, if the brain is the seat of the disease, the forehead and eyes are noticed to be principally affected; the former is contracted, the eyebrows are knit, and light cannot be borne by the eyes. In diseases affecting the chest, the parts of the face chiefly altered are the nose and cheeks; the nostrils are seen to dilate with each inspiration, and the cheeks are flushed. When the stomach and bowels are affected, there is a peculiar pallor and contraction about the mouth.

9. *Feverishness.*—There are symptoms which manifest themselves in children from time to time, the signification of which may be very grave and indicative of serious disease, or which may be trivial and passing in its nature, and of no importance. Thus, a child may suddenly become feverish, the temperature may be raised, the pulse

quickened, the skin become hot and burning, and the face flushed, and yet, after the lapse of a few hours, the child may be perfectly well. Some children are much more liable to such attacks than others, and they frequently are the cause of much unnecessary alarm. If the child has been in its usual health up to this time, if it has not been restless, irritable, listless, or morose, if its appetite has remained good and its sleep been undisturbed, the fever will generally pass away in a few hours. If, however, it should persist, treatment had better be adopted without further delay, as fever of a serious nature may be impending. Many children suffer from this kind of feverishness from fright, from errors in diet, and from other like causes. In all cases in which the feverishness is of longer duration than a few hours, medical assistance should be sought, as one of the eruptive or continued fevers may be impending.

Should there be along with the feverishness the symptoms of an ordinary cold in the head, such as running at the nose and eyes, sneezing, dry, hacking cough, hoarseness, great heat of skin, in all probability an attack of *measles* is impending. If there is chilliness and lassitude, with pain in the head and soreness of the throat *preceding* the fever, and a pulse that is very frequent, there is cause to dread the approach of *scarlet fever*. If there is shivering, high fever, headache, vomiting, and especially severe muscular pains referred to the back, and if there is the absence of throat and head symptoms characteristic of scarlet fever and measles respectively, there is strong reason to suspect *small-pox*. Additional assistance may be obtained in forming a correct opinion with regard to any individual case by a knowledge of the existence of small-pox in the neighbourhood. When there is little or no constitutional disturbance, and a rash beginning on the shoulders and back, and consisting of rose-coloured pimples which become converted into transparent vesicles, the disease is *chicken-pox*. It is well, whenever any one of these diseases is suspected, to call in the

aid of the physician, because, although the attack may be mild, the after-consequences are frequently serious, and if neglected may lead to permanent mischief or to a fatal result. Thus, after measles, inflammation of the lungs, bronchitis, or croup may supervene, unless sufficient care has been exercised after the departure of the fever to guard against cold. Also after scarlet fever, kidney affections are apt to arise unless care is taken to prevent exposure. The fact of such complications being liable to occur in the mildest cases should prevent them being treated lightly, and in regard to these, as well as the graver forms, the utmost caution is necessary till all risk is over. There are other fevers, called continued fevers, such as *typhoid*, which are ushered in by long-continued disorders of the digestive and nervous systems which cannot fail to attract attention: and when observed, early assistance should be obtained, as long and careful management are necessary in such cases.

10. *Cough*.—This, in children, may be a symptom of serious or trivial import according to the cause from which it has arisen: thus, it may proceed from worms, dentition, bronchitis, pneumonia, or may arise in connection with ordinary catarrh; but, whatever the cause, it ought not to be looked on slightly, nor be allowed to go on unchecked.

11. *Vomiting and Diarrhoea*.—There are several other affections, such as vomiting and diarrhoea, which may be significant only of disorders of the digestive system, or which may be more serious in their nature. Thus, vomiting is frequent at the commencement of many diseases; and unless there has been anything at fault in the way of errors in diet to account for it, it should not be treated lightly. Generally a parent will be able to distinguish between the simple and that which is of more serious import. Should the vomiting, however caused, be persistent, it must on no account be allowed to go on unchecked. Diarrhoea, especially in children who are teething, is frequently neglected till very considerable emaciation has occurred. This cannot be

too strongly condemned, as the mortality from this cause in children is very great. If the diarrhoea does not yield in a day or two to careful dieting, no further delay should occur in sending for medical assistance. Should the case then be judged one merely of indisposition, the means to be adopted are rest, regulation of temperature, and careful dieting.

Disease, Tendencies to.—See TENDENCIES TO DISEASE.

Diseases Caused by Disorder of Sebaceous Glands.—See SEBACEOUS GLANDS, DISEASES CAUSED BY DISORDER OF.

Diseases, Classification of.—See CLASSIFICATION OF DISEASES.

Diseases, Contagious, Propagation of.—See CONTAGIOUS DISEASES, PROPAGATION OF.

Diseases, Feigned.—See FEIGNED DISEASES.

Diseases from Dust, etc., Regulations to Prevent.—See HARMFUL OCCUPATIONS.

Diseases of Pregnancy.—There are sundry diseases which, although they are by no means peculiar to the pregnant state, may be said to be intensified by it, or more likely to appear in the patient in an aggravated form. Each of these diseases demands separate consideration in connection with pregnancy, and remarks on their symptoms and the course that should be pursued will be found under BLADDER (IRRITABILITY OF), CONSTIPATION, CRAMPS IN THE LEGS, DIARRHOEA, FAINTING, HEADACHE, HEARTBURN, INCONTINENCE AND RETENTION OF URINE, LEUCORRHOEA OR WHITES, PAIN IN THE SIDE, PALPITATION, PILES, PRURITUS, SALIVATION, SLEEPLESSNESS, SWELLING OF FEET AND LEGS, TOOTHACHE, VARICOSE VEINS, VOMITING (EXCESSIVE). All these are treated in connection with Pregnancy.

Diseases, Parasitic.—See PARASITIC DISEASES.

Dishes, Unwholesome.—See UNWHOLESOME DISHES.

Disinfectant (*Lat. dis*, opposite to; *infectus*, tainted; from *inficio*; from *in*, into; and *facio*, I make).—A disinfectant is an agent that attacks poisonous, miasmatic, or putrescent matters, and either by uniting with them, or breaking up their constituent elements, transforms them into innocuous products.

Disinfectant for Vessels.—In communicable diseases, and especially in typhoid fever and dysentery, always keep in the vessels and pour down the closet daily, some of the following mixture:—Water, $2\frac{1}{2}$ gallons; sulphate of iron, 4 pounds; carbolic acid, 4 ounces.

Disinfectants and Deodorizers.
—The remarks in this and the following articles on disinfectants and deodorizers are taken mainly from the material accumulated by an American writer, the author of "Gunn's Family Practice."

There are some persons, doubtless, who, having lived for years in proximity to stables, open cesspools, obstructed and filthy gutters, and having for the same time enjoyed a tolerable degree of health, are ready to make light of the necessity of preventive measures taken against these friends to disease. But of these persons it may be affirmed with absolute certainty, that if they have not as yet been actually poisoned by the continued inhalations of a corrupt atmosphere charged with gaseous poisons, they are nevertheless predisposed—or primed, as it were—for disease; so that even a slight change in the conditions of the atmosphere, food, or their mental or physical necessities, serves as a spark to ignite into febrile fire their weakened and susceptible systems. And if it were possible for us to obtain the statistics, it would undoubtedly be found that the aggregate loss of life through the slow and insidious action of poisoned gases

arising from uncared-for filth—manifesting itself in the form of digestive derangements, bowel and kidney diseases, consumption, scrofula, etc.—would be greater than that effected by the most fearful pestilence.

All disinfectants and deodorizers should be regarded as simply aids for restoring and preserving healthful purity, and not as substitutes for pure air and cleanliness. There can be no substitute for a pure atmosphere.

Disinfectants, Artificial.—The principal artificial disinfectants are Charcoal, Quicklime, Sulphate of Lime, Coal Tar and its products, Chlorine, Ozone, Permanganate of Potash, Nitrous Acid, Sulphurous Acid, Carbolic Acid, and Coffee, which *see*.

It is, however, most important to remember that none of these agents, valuable as they are, can take the place of ventilation and free currents of air. In a sick-room a small fire should be kept up, and the door or window opened for a few minutes three or four times a day, but not so as to place the patient in a draught. It is important to have the air thoroughly renewed. Charcoal should be placed about the room, or some carbolic acid should be sprinkled about. Deodorants are not only of much service in purifying the air in the above-mentioned cases, but they are equally valuable in destroying the noxious emanations from sewage; for this purpose numerous measures have been suggested. Charcoal may be employed, but it is not so useful here as in purifying the air. The A.B.C. deodorant is a mixture of animal charcoal, blood, clay, and alum refuse, and bids fair to become an important agent in deodorizing sewage. Dry earth, as we have already pointed out, has a good effect; it is used in earth-closets, and has been found very valuable in large institutions and in camps; the excreta are at once covered over, and no effluvia escapes; in this way diarrhoea and typhoid fever appear to have been prevented. Quicklime and water may be added to the sewage until a deposit occurs. The lime forms insoluble salts, and decomposes the sulphuretted

hydrogen; it delays, but does not prevent, the decomposition of animal and vegetable matters. The salts of alumina mixed with charcoal are very useful, and are important ingredients of the A.B.C. deodorant. Perchloride of iron is also useful: it decomposes sulphuretted hydrogen and carbonate of ammonia, which is so often met with in sewage. A solution of chloride of zinc (half a pound to a gallon of water) may be used; it will destroy ammoniacal compounds and organic matter; it delays decomposition for some time. Permanganate of potash must be used in very large quantities to have much effect on sewage; it is useful in deodorizing excreta, and may be poured on the stools of patients suffering from cholera or typhoid fever. The preparations from coal-tar, as creasote, carbolic acid, and cresylic acid, are very valuable agents in purifying sewage; they may be obtained as powders or crystals, or liquids; the latter are the most useful, as they mix readily with sewage; one part of the liquid carbolic acid, if good, may be mixed with eighty or one hundred parts of water and poured into a cesspool or on a dung-heap, or used in a water-closet. It does not follow that because air smells badly it is therefore impure in proportion; gas-works or tan-works may be disagreeable, but they are not injurious; again, a cesspool or drain may not smell much, but the exhalations may be most dangerous. A noxious smell is like a Davy lamp to a miner, a warning of danger, but it is not itself the danger. By keeping in mind the evils arising from impure air, close rooms, noxious emanations, and sewage contaminations, and by using every means to procure ventilation and to remove the impurities by chemical means, a vast deal of good must result, and many diseases may be prevented.

Disinfectants, Natural.—*The Atmosphere* is a great disinfectant, partially by its removal with its currents of contaminating matter, and partially by its power of oxidation.

Water is the next great disinfectant employed by nature. As putrefaction, how-

ever, will not take place in the absence of moisture, water may also be regarded as one of the greatest promoters of corruption. Water acts as a disinfectant by the simple act of washing. Each shower of rain, each river and stream, removes from the land a certain quantity of substance susceptible of decomposition. The ocean bears the decaying matter further from the land, mingles it with pure water, dashes it about in the air, and thus produces oxidation and purification.

Soil or fresh earth is another great disinfectant, and, in conjunction with air and water, one of the most efficient of all known agencies. Organic and putrid substances sinking into its porosities in solution and mixed with air, become of necessity oxidized. Water impregnated with every impurity in sinking through the earth is filtered, and is only deleterious where the abundance of animal matter is more than can be acted upon by the soil. With the great deodorizing power of common earth, every one is familiar; "In fact," to quote Dr. Letheby, "the graveyards of every city testify to the enormous quantities of organic matter that can be disposed of through its agency; and no one who has witnessed the rapid deodorizing power of clay, when sewerage or night-soil is distributed upon the land, can doubt its efficacy. The Chinese have long taken advantage of this power, for they mix night-soil with one third of its weight of fat marl and knead it into cakes, which are common articles of commerce. In practice also, it has been found that a ton of clay will completely deodorize about three tons of the solid matter of sewerage."

Light is another natural disinfectant, and tends to promote oxidation.

Heat and Cold are likewise powerful disinfectants—partly natural, partly artificial. As a means of immediate disinfection of contaminated garments, bedding, and even close apartments, ships, etc., heat is at once a cheap and most effectual method. The boiling of infected clothing, etc., is admitted to effectually destroy any contagious poison, and practically, upon a large scale, in such work, experience proves that it is

best to employ steam as a means of heating. It is probable that no circumstance contributes more directly to the perpetuation and spread of typhus fever than the accumulation and bad management of contaminated clothing, etc., that ought, under all circumstances, to be purified (by heat) as soon as it leaves the patient or the bed.

Frost or Low Temperature, when continued for a sufficient length of time, will effectually destroy miasma; but it should be noted that a freezing temperature does not appear to mitigate the personally infectious poisons or contagions (i.e., small-pox, etc.), though, with certain exceptions, it arrests putrefaction and the action of fermentation.

Disinfectants, Useful Recipes for.—1. For water-closets, vessels, stationary tubs and basins, bath-tubs, and any other drain-pipe.

Hot water 2½ gallons.
Copperas 4 pounds.
Carbolic acid 4 ounces.

Mix well together and pour into the foul place.

2. For swill-pails.—When empty, sprinkle with chloride of lime, and rinse well in clean water after a few hours.

3. Cesspools, their overflow, and privies.—Dry copperas or chloride of lime, by the shovelful.

4. For disinfecting erysipelas bandages, poultice-cloths, etc.

Carbolic acid 2 ounces.
Hot water 1 gallon.

Soak the articles twelve hours, then wash, and use only for the same case. Burn them afterwards.

5. For washing bed and body clothing in erysipelas, small-pox, and other contagious diseases.

Sulphate of zinc . . . 2½ ounces.
Carbolic acid 1 ounce.
Hot water 1 gallon.

Soak the articles twelve hours, then wash; use only for the same case, and burn them

afterwards. Hot water is necessary, as carbolic acid is very slightly soluble in cold water unless combined with glycerine.

Disinfectants, to be effective, should be used freely; and any garments or cloths put to soak should be fully covered with the liquid and occasionally stirred.

Dislocation (*Lat. dis, apart; loca'tus* placed; from *loco*, I place).—Total inability to bend any of the joints, with acute pain upon a forcible attempt made by another person to perform such motion, occurring immediately upon the receipt of an accident, is enough to excite strong suspicion of dislocation, and a surgeon should be sent for without loss of time, that he may have the advantage of performing the operation of reduction before swelling and inflammation of the surrounding parts have taken place, which would both aggravate the pain and render the immediate reduction more difficult, or even impossible.

In the great majority of cases of dislocation at a large joint, it is impossible, after an interval of twelve hours, to replace the separated bones without administering some anæsthetic.

Dislocation is by no means so frequent an accident as fracture. The joint which is most prone to dislocation is the shoulder; next in frequency are the hip, elbow, and ankle. Like all other injuries from great external violence, dislocation more frequently occurs with men than with women. It is occasionally complicated by fracture of one or more bones very close to the joint. This compound injury generally renders the treatment of the dislocation very difficult, as the surgeon cannot apply any extension to the short terminal fragment.

Dislocation, Apparent.—In children and young persons a peculiar injury is sometimes met with near a joint which may be readily mistaken for a dislocation; this is the injury called by surgeons "separation of epiphyses." Up to the age of sixteen or eighteen years, and in some instance beyond this, the long bones of the extremi-

ties are not single masses composed entirely of osseous tissue, but the joint ends are separated from the shaft by layers of a tough gristly structure, which, as the individual approaches to adult age, gradually disappears, leaving the terminal portions and the intervening shaft to be converted into one long cylindrical bone. These remote and articular portions, before their fusion with the rest of the bone, are called epiphyses, and whilst in this condition may, through external violence, be detached from the shaft and displaced, thus producing the symptoms of dislocation or fracture.

Dislocation, Compound.—Some joints are much more disposed than others to compound dislocations. The accident is rare at the hip, shoulder, and knee, but is very frequent at the ankle, elbow, and wrist.

Dislocation, Principles Relating to.—The following are some of the chief principles relative to the present subject laid down by Mr. Pott, formerly surgeon to St. Bartholomew's Hospital; and they merit great attention :—

1. Although a joint may have been dislocated by means of considerable violence, it does by no means follow that the same degree of violence is necessary for its reduction.

2. That all the force used in reducing a luxated bone, be it more or less, be it by hands, towels, ligatures, or machines, ought always to be applied to the other extremity of the said bone, and as much as possible to that only.

3. That in the reduction of such joints as are composed of a round head, received into a socket, such as those of the shoulder and hip, the whole body should be kept as steady as possible.

4. That in order to make use of an extending force with all possible advantage, and to excite thereby the least pain and inconvenience, it is necessary that all parts serving to the motion of the dislocated joint, or in any degree connected with it,

be put into such a state as to give the smallest possible degree of resistance.

5. That in the reduction of such joints as consist of a round head, moving in a socket—for example, the shoulder and hip—no attempt ought to be made for replacing the said head until it has by extension been brought forth from the place where it is, and nearly to a level with the said socket. All that the operator has to do in these instances is to bring the bone to this level; the muscles attached to it will, for the most part, do the rest for him.

6. That whatever kind or degree of force may be found necessary for the reduction of a luxated joint, such force should be employed gradually; the lesser degree being always first tried, and it being increased *gradatim*.

With respect to the second maxim here laid down, we would remark that Sir Astley Cooper states that, so far as he has had an opportunity of observing, it is generally best to apply the extension to the bone which is dislocated; but that dislocations of the shoulder are exceptions, in which he mostly prefers to reduce the head of the bone by placing his heel in the arm-pit, and drawing the arm at the wrist, in a line with the side of the body.

Extension may either be made by means of assistants, who are to take hold of napkins or sheets, put round the part at which it is judged proper to make the extension, or else a multiplied pulley may be used. In cases of difficulty, Sir Astley Cooper thinks the pulley should always be preferred.

When the attempts at reduction fail in consequence of the muscular strength of the patient, which counteracts all efforts to replace the bone, or from several days having elapsed since the receipt of the injury, constitutional means should be employed in conjunction with those that are mechanical. The constitutional means here referred to are those which produce a tendency to fainting, such as bleeding, the hot bath at 100 or 103 degrees, and small quantities of emetic tartar to produce nausea, but not vomiting. (Now-a-days the use of chloro-

form in such cases has rendered the employment of so-called constitutional means a thing of the past.)

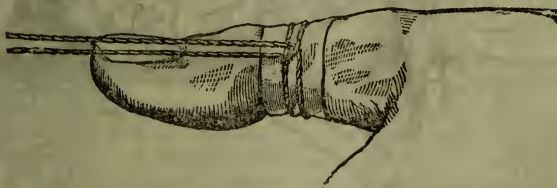
All that is necessary after the reduction of a simple dislocation is to apply to the part cloths dipped in Goulard water, or spirit of wine and water, with a proper bandage, and to keep the limb perfectly easy.

In compound dislocations, the reduction must be effected without delay, and with as little violence and disturbance as possible, and then the wound is to be treated in all respects as any other wound in the same part.

the receipt of the injury. After an interval of six months, the case is generally hopeless; the limb, however, does not remain immovable and quite useless; the head of the dislocated bone, by its pressure, forms for itself a fresh socket in that portion of the adjacent bone on which it was thrown at the time of the accident; fresh sinews are formed, the muscles adapt themselves to the altered state of things, and a new joint is formed, which allows the patient considerable, though far from perfect, use of his arm or leg. This favourable process is carried on only in strong and healthy individuals.



DISLOCATION OF THE WRIST-JOINT.



APPARATUS EMPLOYED IN THE REDUCTION OF DISLOCATION OF THE THUMB.

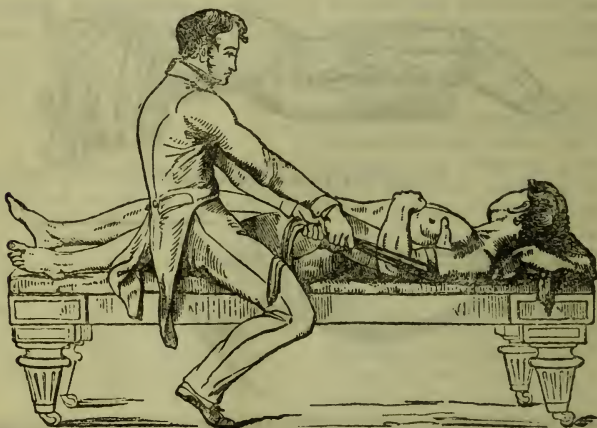
Dislocation, Reduction of.—If the dislocation has been left unreduced for a week or ten days, it becomes necessary to place the patient thoroughly under the influence of chloroform, for the purpose of relaxing the tense muscles which prevent the return of the displaced bone. In dislocations of six weeks' or two months' standing, the chances of a reduction will depend upon the situation of the injury. If the shoulder be affected, well-directed attempts, under the influence of an anæsthetic, will probably replace the head of the bone. With the hip, however, the chances of recovery are not so good at the end of a month after

Dislocation, Signs of.—The signs which indicate a recent dislocation are: Inability to move that part of the limb immediately below the seat of injury, the displaced extremity of the bone being fixed in its unnatural position; pain in the injured joint, which varies in intensity in different cases; sometimes the displaced bone presses upon one or more large nerves, and then causes much suffering. Some swelling of the surrounding soft parts and bruising of the skin are generally present. Finally, but more important than any other sign, there is deformity in the joint; this can usually be recognised at the first glance;

sometimes there is flattening, as in dislocations at the shoulder, and at other times well-marked unnatural prominence of one or more bones, as in the elbow and ankle.

It should be borne in mind that all these symptoms are common to dislocation and to fracture near the joint-end of a bone; but in fractures the segment of bone below the injury is usually very movable, and one may generally detect, on moving the broken parts, the peculiar grating noise, called by surgeons *crepitus*, which is felt rather than heard, both by patient and medical atten-

Dislocation, Surgical Treatment of.—This consists in pulling at the part below the injured joint—extension; in keeping the parts immediately above the joint fixed—counter-extension; and in endeavouring with the hand to elevate or replace the dislocated bone—manipulation. In recent cases of dislocation of the shoulder and elbow and of most smaller joints, a sufficient amount of extension may be obtained by the unaided efforts of the surgeon and one or two assistants; but in recent displacements of the upper extremity of the



DISLOCATION OF THE SHOULDER-JOINT.

dant. In pure dislocation this *crepitus* is absent.

Another distinction between dislocation and fracture consists in this: when once the deformity attending the former injury has been removed by surgical manipulation, or setting of the joint, as it is called, it does not return, as the head of the displaced bone when brought back into its socket remains there; with fracture, on the other hand, there is a constant tendency for the fragments of bone to become displaced, until they are joined together by young bone in the course of the treatment.

thigh-bone, and in most old dislocations of other joints, the pulleys are required. Counter-extension is generally kept up by means of a napkin, jack-towel, or folded table-cloth. The reduction of the bone is indicated by a sudden snap, the form of the joint and its functions are at once restored, and the pain is very much relieved; the whole limb also recovers its natural length and position in relation to the rest of the body.

The subsequent treatment consists in confining the limb for a period varying with the size and situation of the injured joint.

In dislocation of the shoulder, the arm is bandaged to the side of the body for about two weeks, and in dislocation of the hip it is necessary for the patient to remain in bed for some time. The muscular power and general tone of the limb are restored by shampooing and friction, affusion of cold water, and the use of liniments.

Recovery can never be complete, as the dislocated joint always remains weaker than any of the other sound joints. In a healthy and young or middle-aged subject, where the injury has been properly treated, this difference is scarcely appreciable; but in old people, and those who are rheumatic or gouty, the joint remains more or less stiff and painful, and is much affected during climatic changes and after exposure to cold and wet.

Disorders, Mental, General Treatment of.—*See* MENTAL DISORDERS, GENERAL TREATMENT OF.

Distemper, Painting in (*Ital. distemperar*, I dissolve in water; from *tempera*, water colour).—Painting with distemper is a much better plan than hanging the walls of a room with paper. Not to speak of the paper-hangings charged with arsenic, there are many more that are peculiarly adapted by their rough and flocculent surfaces to attract dust, and so possibly, disease-germs; many are so expensive that they are not often changed; and, lastly, many are hideously ugly, and quite unsuited for the display of pictures. On the other hand, distemper is innocuous, smooth, so cheap that it can be renewed at very small cost every year, and, when the colour is well chosen, exceedingly pretty and effective. Pale blues, pinks, and greys, with darker shades for the mouldings, have a very good effect. This simple form of wall-decoration seems to be coming into fashion.

The best distemper to use is that which is known as "Alabastine," manufactured and supplied by the Church Manufacturing Company, 127, Pomeroy Street, Peckham, London, S.E. It is possessed of valuable

sanitary properties, and is cheap and easily applied, the powder, which may be had in a great variety of tints, requiring to be mixed with hot water only, preparatory to putting it on the walls.

Diuretic Infusion.—*See* INFUSIONS.

Divers, Diseases Peculiar to.—

There is a peculiar and interesting class of disease which attacks those who work in diving-bells or caissons. It is caused by the excess of atmospheric pressure which exists under water, which may equal several times that to which men are exposed on land. The symptoms do not, however, attack the labourer on going down, but rather on leaving work. The symptoms, dependent upon the removal of pressure, are as follows:—Extreme pain; sometimes nausea and vomiting; sometimes paralysis; sometimes headache and dizziness. They are frequently associated with a sudden rush of blood to the brain and spinal cord. It is recommended, by way of precaution, that only wiry men be selected for the work, that their time of labour be shortened in proportion to the pressure; that they take all possible care of themselves, never going to work on an empty stomach, eating meat and drinking coffee, and, when coming out of the caisson, taking time to do it gradually, passing into an intermediate atmosphere first, and resting an hour afterwards.

Dizziness in Ear Disease.—

Dizziness, accompanied sometimes with reeling, nausea, and vomiting, may be an attendant of various forms of ear disease. In rare cases, in addition to these symptoms, there may be stupor, unconsciousness, or epileptic seizures, and the patient may be thought to be in an ordinary epileptic fit. Foreign bodies in the ear have produced not only symptoms of fits, but also temporary paralysis. The removal of the foreign substance from the ear has been followed by an instantaneous and permanent disappearance of all these peculiar phenomena. It can be said that dizziness may be pro-

duced by disease in the external, the middle, or in the internal ear, and also by disease in the nerve of hearing itself.

Doing without Sleep.—*See* SLEEP, DOING WITHOUT.

Domestic Medicines.—It is not intended under this heading to mention a long list of drugs which may be used by the patient or his friends at their own discretion, but rather to advise that a few of the simple and more commonly employed remedies should be kept in the house to be used only in an emergency, and to be ready to hand in the house in case it should be found necessary that a medical man should be called in during the night. To a person living in the country, at a considerable distance from help, much valuable time might be wasted in endeavours to procure what was wanted in time of an emergency. With a few of the simpler and more frequently employed remedies at hand, this might be obviated, and all disagreeable after-reflections prevented. In the purchase of drugs it is absolutely necessary to procure none but the best.

There is often no worse enemy to the health of a household and no more dangerous one—for it is insidiously introduced under the guise of friendship—than the family medicine-chest. Who can not recall the reverence with which that solemn box, formal and ponderous, yet sightly, from the neatness of its structure and the polish of its exterior, was once regarded by all? The old unlocked it with the cautious respectfulness due to a treasure, and the young looked upon its range of cut-glass bottles and variegated boxes with mystic labels and here and there a terrific warning of “Poison,” and trembled. Every youngster might well tremble as he glanced at that store of bodily torment from which he had suffered in the past, and was sure to suffer in the future. The disgusts of taste, and the writhings of the stomach, in the pains of a purge and the agonies of a vomit, were always associated, in the minds of the young, with that awful

medicine-chest; but its very terrors seemed to heighten their reverence.

Drugs of all kinds, and especially opiates, should never be tasted by people in health, and even when ill, only under the specific direction, each time, of some skilful and discreet physician. A good story is told *apropos* of the mischief sometimes resulting from physicking even when administered professionally or under professional advice, and it will bear repetition here:—

“A stonemason, driving a heavily-laden cart, overtook a doctor’s boy on horseback. “Hallo! what do you carry?” said he. “Medicines,” was the reply. “Go ahead,” returned the mason; “I carry gravestones.”

Dorsal Vetebræ (*Lat.* *dorsum*, the back; *vertebra*, a joint; from *verto*, I turn).—The name given to the *vertebræ* of the spine between the cervical *vertebræ* or *vertebræ* of the neck, and the lumbar *vertebræ* or *vertebræ* of the loins, and being, as their name implies, the *vertebræ* of the shoulders (or between the shoulders) and back.—*See* VERTEBRÆ.

Double Concave Glasses.—*See* SPECTACLES.

Double Convex Glasses.—*See* SPECTACLES.

Drains and Drainage.—The importance of drains and drainage from a sanitary point of view is now universally admitted. The drainage system of a house must be sufficient for the removal of all superfluous water and of all matters which are soluble in water, or can be so mixed with it as to be carried away by it. It is therefore necessary that all house-drains should be large enough, air-tight, and laid with a proper fall or slope. In view of health and comfort, the egress of foul air should be prevented by having suitable sinks or drains fitted with traps, of which there are sundry sorts. Open sewers and drains are an abomination, and the noxious gases emitted by them are a fruitful cause,

as too many of us know to our cost, of typhoid fever, not to speak of a considerable number of other deadly diseases.

The sewer-pipes are exceedingly apt to leak at the joints if made from earthenware, as is so often the case; and they are also liable to be broken by the settling of walls, sand, or gravel-beds, etc. Even if these accidents are escaped, the material of the pipe is by no means impervious; and, in fact, the only safe drain-pipes for noxious materials of this kind are those made of iron, securely united by leaden joints, and so laid as to be protected from undue pressure. These, too, should be regularly inspected, as rusting sometimes goes on with unusual rapidity.

The course of the drain should be as direct as possible, without angles, and with the greatest fall that can be obtained. If it necessarily passes under the house, although it is better otherwise, it should be imbedded in at least six inches of cement. The drain should always be trapped and ventilated. All waste pipes should be sufficiently large to allow of a free flow. The soil-pipes of water-closets and urinals are ordinarily of too small a calibre. A competent authority declared they should never be less than four inches in diameter. They must be composed of very strong cast iron with water-tight joints, and protected against rust by several coats of paint inside and out. When practicable, the course of these pipes should be on the outside, and not, as commonly is the case, through the interior of the house. Porous stone is a bad material for sinks; the best is wood lined with lead, glazed stoneware, or slate. A good-sized window, communicating directly with the outer air, is an indispensable requisite for every water-closet, which, moreover, ought to have two doors, inclosing a lobby between, and made always to open inward, to prevent the passage of bad air into the interior of the house.

It is not necessary to look upon serious illness simply as a visitation of Providence, and, having called it "malaria," to feel that you have gone to the bottom of the subject.

Go to the bottom of your own, or your neighbour's, swill-pail, examine your drains, etc., and never rest till you have satisfied yourself that your own want of intelligent oversight is not to blame for the diphtheria, dysentery, or typhoid fever. If your own premises are in order, suspect your neighbour, and try to rouse his attention to the matter.

The question of how to get rid of waste and filthy water, constituting part of the very important subject of drainage, can only be briefly touched upon here. It will be dealt with later on.

The sewers, which in most cities and large towns are supposed to carry off the superfluous liquids or "slops" of all kinds, frequently become imperfect; and the foul fluids—liquid poisons, as they have been most appropriately entitled—stand still in hollow places, or soak through bad joints, and contaminate the drinking-water or the air upon which we are so utterly dependent.

Make it a rule, therefore, neither to sleep nor eat in a house where the drains are not in perfect order, and do not trust to the absence of a bad smell as sufficient evidence that no poisonous effluvia are escaping from sewers, or any of the connecting pipes by which waste water finds its outlet. Above all, reject stationary wash-stands in bedrooms, or bath-rooms, and other "modern conveniences" adjoining sleeping or living rooms. Such modern conveniences are in reality conveniences for the ready entrance of typhoid fever, diphtheria, and other dangerous diseases into your dwellings, and all the ordinary forms of "traps" and ventilators, no matter how well they are kept in order, mechanically, seem to have proved powerless to prevent the admission of these terrible maladies.

It is to be hoped that some sanitary inventor will soon devise effectual methods of sewerage; but, until then, beware of the emanations from foul waters in sewers, drains, etc., as you would of the poison of typhoid fever or of small-pox, which, indeed, it may readily contain.

The words of a well-known medical man, with regard to constant cleanliness, may

well be quoted here:—"Use water abundantly. A deficiency of water means personal cleanliness not attended to, clothes not properly washed, rooms not thoroughly scrubbed out, and cooking and dishes not the most cleanly. The abuse of water does not lie in the large or liberal use of it, but in rendering what we do use uncleanly and unfit for healthy use."

Drains, Effluvia from.—See CESSPOOLS, EFFLUVIA FROM.

Draughts.—The following is an extract from Sir Erasmus Wilson on draughts, a subject of the greatest importance to all of us. In his able work on Skin Diseases, the able physician just named speaks thus of draughts and their consequences:—

"The principle on which the operation of this source of serious disease depends is the partial cooling of the body through the medium of the skin, and is illustrated in the following experiments by Edwards and Gentil. They immersed the hand, having a natural temperature of 98°, in cold water at 418°, and kept it there for twenty minutes. Five minutes after its removal its temperature was ascertained to be no higher than 55° and at the end of one hour and a half, 698°, so that as an effect of the application of cold for a short period to a part of the body, a depression of temperature occurs to the amount of forty-three degrees Fahrenheit, and the part recovers only fourteen degrees of its heat in one hour and a half; and if we suppose the heat to increase in this ratio, the system would require nearly five hours to regain the temperature which in twenty minutes had been removed. Now, this is precisely the condition of a person who exposes a part of the body, usually covered, to a cold but still atmosphere, or of a person properly clothed seated in a draught or current of cold air. The warmth of the part so exposed, or of the side of the person directed towards the draught—the uncovered parts first, and then the covered—is reduced; and, as an effect of the chill, the transpiration is checked.

"But soon another principle comes into

action, and one of greater importance than even the preceding; it is thus experimentally illustrated:—When the hand is immersed for some time in cold water, and its heat consequently lessened, the temperature of the opposite hand is also reduced, and to a very remarkable extent, so that the mischief of partial cooling is not limited to the first effect produced upon the exposed or chilled part of the body, but is gradually spread over the frame until the person feels completely chilled through. Have we not all at some time or other felt this? . . . It is in this way that thin shoes, wet shoes, wet dress, or damp sheets, do their work of mischief and disease, and cannot, therefore, be too carefully avoided. Youth will resist much, strength much, health much, but it must be recollected that *we die but once*, and although we escape ninety and nine times, yet the hundredth may be near, and the last.

"Now, the dangerous results which sometimes flow from causes of the above description are popularly ascribed to 'checked perspiration,' but the truth is that the suppression of perspiration is merely one of the effects of the shock received by the constitution, and by no means the cause. The first effect of the cold upon the part is a lowered tone of the cutaneous nerves, and a consentaneous contraction in diameter of the capillary blood-vessels. As a consequence of these preliminary changes, the skin becomes contracted and shrunk; less blood than is natural is sent to the surface; nutrition and its chemical actions are suspended; perspiration is suppressed, and the surface becomes pallid and bloodless. The blood, in fact, no longer able to enter the contracted capillaries, its cutaneous circulation being at an end, retreats upon the internal membranes and vital organs, affecting one part or other of the mucous membrane, or one or other of the vital organs, according to the constitutional peculiarity of the individual. In one, the blood will be determined on the lungs, causing cough and inflammation; in another, upon the throat, producing sore throat; in a third, upon the

membranes lining the nose, eyes, and ears, producing 'migraine,' or cold in the head; in a fourth, upon the stomach, causing a bilious attack; in a fifth, upon the bowels, causing pain and inordinate action; in a sixth, on the kidneys, producing severe pain in the loins; in a seventh, on the joints, producing rheumatism; in an eighth, on the nerves, producing neuralgia or tic-doloureux; in a ninth, on the brain, producing faintness, insensibility, convulsions, and even apoplexy, and so on. In a minor degree, it may be observed, that whenever we are slightly chilled, as by too light dress, by cold shoes, etc., any sensitive organ of the body immediately evinces discomfort or distress; thus, if we have suffered at any period from tic-doloureux or rheumatism, we immediately feel a warning twinge; or, if our lungs are delicate, we begin to cough; while, on the other hand, the very instant we get warm, the twinge ceases and the cough subsides."

Draughts, Danger of.—It is a matter of nearly universal observation that draughts of air are highly injurious. So also is the partial application of cold to portions of the body unaccustomed to it. Many persons will begin to sneeze, or become sensible of a sore throat, within a few minutes after being exposed to a current of cold air striking on the back of the neck. Children and sensitive adults often take cold from the draughts which penetrate through the crevices of windows and doors. The pernicious effect of draughts has been long known, as we may conclude from its being the subject of a warning adage to the following effect: "When the wind comes upon you through a hole, it is time to make your will, and take care of your soul."

Even sitting too close to the walls of a room may induce cold, as Pattenkofer has shown that a current of air to the amount of forty-three gallons per hour can pass through every square yard of an ordinary brick wall. The effects of cold air are much increased by its association with moisture, on account of the much greater conducting power for heat of the latter.

Draughts, Medicinal.—*Alkaline Draught.*—A very pleasant alkaline drink may be made by dissolving two or three drachms of bicarbonate of potash in two pints of water, adding an ounce of either syrup of orange-peel or syrup of lemons. This is very useful in rheumatic fever, and in those cases in which the urine, when it cools, deposits a reddish or brick-dust sediment.

Anti-spasmodic Draught—Take of solution of the hydrochlorate of morphia, fifteen minims; spirit of ether, a drachm; peppermint water, sufficient to make an ounce and a half. This is a useful preparation in cramp-pains in the stomach and bowels.

Anti-spasmodic Draught (another).—Take of spirit of chloroform, half a drachm; aromatic spirit of ammonia (spirit of sal-volatile), half a drachm; compound tincture of cardamoms, two drachms; peppermint water, nine drachms; mix. This is a useful draught in cases of flatulence accompanied by griping or colicky pains. It may be repeated in three or four hours, if necessary.

Cathartic Draught.—Take of Epsom Salts from two drachms to half an ounce; dilute sulphuric acid ten to twenty minims; water, half a pint. To be taken the first thing in the morning on an empty stomach. Useful in bilious attacks due to over-indulgence at the table, and as a purge in people of plethoric habit of body.

Compound Mixture of Senna or Black Draught.—This preparation consists of Epsom Salts, extract of liquorice, tincture of senna, compound tincture of cardamoms and infusion of senna, and may be obtained of any chemist. It is given in doses of an ounce to an ounce and a half in cases similar to the above.

Diaphoretic Cooling Draught.—Take of Ipecacuanha wine, ten to twenty drops; sweet spirit of nitre, an equal quantity; solution of the acetate of ammonia, two drachms; syrup of orange-peel, a drachm; camphor mixture to make an ounce and a half. May be repeated in four hours. Very useful in common cold and febrile and

inflammatory attacks. It causes the skin and kidneys to act more vigorously, and so allays the heat of the body and diminishes thirst.

Saline Draught.—Take of bicarbonate of potash, twenty grains; syrup of lemons or syrup of orange-peel, a drachm; water, an ounce and a half; mix. In order to make this into an effervescing, cooling draught, a tablespoonful of lemon juice, or fifteen grains of citric acid, should be added. This draught is beneficial in quenching thirst and allaying the nausea sometimes accompanying febrile disturbance. It also tends to diminish the heat of the body. It is given in inflammatory and febrile affections.

Sleeping Draught.—Take solution of the hydrochlorate of morphia, or laudanum or nepenthe, thirty minims; syrup of tolu or syrup of orange-peel, a drachm; camphor water to an ounce and a half; mix; and take at bed-time. Useful in cases of sleeplessness accompanied with pain. As laudanum frequently gives rise to headache, the nepenthe may be found to answer better.

Sleeping Draught (another).—Take of bromide of potassium, thirty grains; tincture of henbane, thirty minims; camphor water, an ounce and a half. This is a useful draught to procure sleep in cases of nervous irritability, or where there is no apparent cause to account for the patient's sleeplessness.

Tonic Draught.—Take of aromatic spirit of ammonia (spirit of sal-volatile), half a drachm; compound tincture of gentian, two drachms; water, to an ounce and a half or tincture of ginger, half a drachm; compound tincture of cardamoms, two drachms; water to an ounce and a half. To be taken half an hour before dinner.

Draughts, Sleeping.—See SLEEPING DRAUGHTS.

Drawn Mouth.—See HEMIPLEGIA.

Dreaming.—This has been defined as the wakeful and sentient condition of some of the faculties of the mind whilst the

others are asleep, and this may be taken as a good definition and explanation of an operation of the mental power which has been a source of perplexity to many and the cause of even superstitious feeling.

Dreams.—Speaking of dreaming, an eminent writer, Mr. G. H. Lewes, has said that "dreams are mental processes closely allied to the reveries carried on during waking hours. In sleep the external senses are almost entirely closed against their ordinary stimuli, and the active organs are in repose. The consequence is that all, or nearly all, those multifarious sensations which, through the five senses and the muscles, stimulate the activity of the brain during the waking hours, have no longer any influence in swelling the stream of consciousness, or in determining the direction of the thoughts. We do not see objects, smell odours, hear sounds, or taste flavours; even the sense of touch has no distinctness, such as would create the perception of objects, but is confined to a general feeling of contact with the bed-clothes. Now, whoever for a moment reflects on the immense influx of sensation which is incessantly stimulating the brain, through the senses, during waking hours, and reflects on their influence in determining the direction of the thoughts, and in furnishing the mind with materials, will see at once that the removal of such a source of excitation must very considerably alter the mental conditions. Instead, therefore, of marvelling that dreams should be incongruous with waking thoughts, our marvel must be to find so much congruity as we often discover between them."

Dreams and Dreaming.—Some writers assert that we do not always dream when we sleep. They say that the proper effect of sleep is to suspend the action of the mind as well as that of the body, and that, to the extent to which we dream, sleep is impaired. They speak of two kinds of sleep,—the one in which we do not dream, and which they call *perfect* sleep; the other, in which we dream, and which they call *im-*

perfect. One of these writers is the famous philosopher Locke, who has expressed a very decided opinion that during sleep we do not always think; his argument in favour of the opinion being, that all of us are conscious of having no dreams during a considerable portion of the time that we sleep, that some persons even do not dream at all, and that a supposition that the dreams are forgotten almost the very moment after they have taken place is absurd. If, however, we do not dream always, how is the beginning of our dreams accounted for? The mind is, on this supposition, at a particular period of sleep, void of ideas; an idea suddenly enters it, and dreaming begins. Now, the idea was not called up by an idea antecedent to it; for antecedently there was no idea in the mind. How, then, did it come to enter the mind? This consideration appears to us adequate to set the question at rest as to whether we dream or not.

Dreaming always, we may remember or forget our dreams according to whether our sleep is deep or slight, and remember them in proportion as it is not deep. One part of the same fit of sleep is more intense than another; the dreamer remembers the dreams of this last part, but forgets those of the first, as regards which it is the same as if he had not dreamed at all. In one state of health the same person has a greater amount of deep sleep than in another; he in consequence remembers his dreams better, or, as he would most probably express it, he dreams more in the second state of health than in the first. Again, one person's bodily constitution is such as to make his sleep generally more intense than that of another person, and in consequence he is less of a dreamer. There have been instances of persons who do not remember ever to have dreamed, and of others who have not remembered any dreams until at a very advanced period of life.

"If," says Pascal, as quoted by Sir William Hamilton, "we dreamt every night the same things, it would perhaps affect us as powerfully as the objects which we perceive every day. And if an artisan were

certain of dreaming every night for twelve hours that he was a king, I am convinced that he would be almost as happy as a king who dreamt for twelve hours that he was an artisan. If we dreamt every night that we were pursued by enemies, and harassed by horrible phantoms, we should suffer almost as much as if that were true, and we should stand in as great dread of sleep as we should be of waking, had we real cause to apprehend these misfortunes. It is only because dreams are different and inconsistent that we can say when we awake that we have dreamt, for life is a dream a little less inconsistent."

Dreams, Remarkable.—The two following are among many instances of remarkable dreams mentioned by Dr. Abercrombie, who vouches for their truth:—A Scotch clergyman, who lived near Edinburgh, dreamt one night, while on a visit in that town, that he saw a fire, and one of his children in the midst of it. On awaking, he instantly got up, and returned home with the greatest speed. He found his house on fire, and was just in time to assist in saving one of his children who, in the alarm, had been left in a place of danger.

Two sisters had been for some days attending a sick brother, and one of them had borrowed a watch from a friend, her own being under repair. The sisters were sleeping together in a room communicating with that of their brother, when the elder awoke in a state of great agitation, and roused the other to tell her that she had had a frightful dream. "I dreamt," she said, "that Mary's watch had stopped, and that, when I told you of the circumstance, you replied, 'Much worse than that has happened, for —'s breath has stopped also'"—naming their sick brother. The watch, however, was found to be going correctly, and the brother was sleeping quietly. The dream recurred the next night; and on the following morning one of the sisters having occasion to seal a note, went to get the watch from a writing desk in which she had deposited it, when she found that it had stopped. She rushed

into her brother's room in alarm, remembering the dream, and found that he had been suddenly seized with a fit of suffocation, and had expired.

Dress for Children.—The infant, whose natural heat is of a less degree in comparison with that of the adult, must be warmly dressed, and even in the hottest weather should wear flannel, in some shape or other, next to the skin. Woollen stuffs, and especially flannel, have the combination of qualities best adapted for the protection of the young from the effects of cold. They are of that loose texture favourable to the retention by the body of its heat, and, moreover, possess the essential property of being readily cleansed by washing. Furred skins are warmer, but less suitable for bodily wear, in consequence of their ready attraction and strong hold of dust and filth of all kinds.

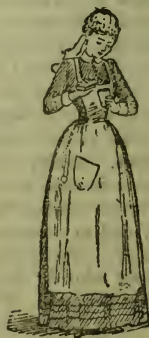
The fashionable style of children's costumes is often directly opposed to all the scientific requirements for comfort and health. Much of it seems to have been devised in accordance with a common notion that children can be hardened, as it is called, or rendered insensible by exposure, to the effects of temperature. This is a dangerous error. They who hold to it will point triumphantly, in proof of their opinion, to those ragged offspring of the poor occasionally seen, who, in spite of their nakedness, seem successfully to defy the cold and the storm. These, however, are the few of the many that disease has left untouched. They are the hardy plants which remain in the wastes of misery unwithered and undestroyed by the neglect and pestilence which have decayed and killed most of those of kindred growth.

The young should find no hindrance in dress to the freest exercise of their body and limbs, so essential to the full development of their growth and vigour. The garments should be large and loose, and no ligatures be permitted to bind with force any part of the frame. Not only will the tightening of the dress cause permanent

distortion, and thus destroy grace and beauty, but it will so interfere with the regular course of the blood and action of the various organs as to produce functional derangement, and finally fatal disease. The infant especially, whose tender frame yields so readily to pressure, requires to be clothed in such a manner that no part of its round and undulating form shall be prevented from moving and expanding with all the freedom of nature. The custom to which some German mothers still cling with the tenacity of national attachment to ancient traditions—that of wrapping up their infants in successive bandages, and fastening them to pillows, like martyrs bound to the stake—is admitted to be the cause of many of those deformities which are more prevalent in their country than elsewhere. In America, fortunately for the physical beauty and health of its people, this custom does not prevail; but American infants, even, are too often much restricted in freedom of movement by the prevalent mode of dressing them.

Dress of Nurse in Sick Room.

—The under-linen should be changed entirely twice a week. The outer dress should be clean and neat, simply made of calico or



DRESS OF NURSE.

some washable material. The dress should never be long enough to touch the floor, nor be extended by crinoline. Aprons, cuffs,

collars, and caps should be frequently changed. A nurse should not serve the meals of patients wearing the same apron as when she dressed wounds, etc. High-heeled boots are out of place in the sick room. The hair should be plainly dressed, well combed up from the neck behind, with an absence of artificial pads or ornaments.

Dried and Salted Fish.—For dietetic purposes fish frequently undergoes some sort of preparation, varying according to the situation, the necessities, or the taste of the consumers. "When circumstances permit," says Dr. Fleming, "they are in general use in a *fresh* state; and in large cities where the supply must be brought from a distance, various expedients are resorted to to prevent the progress of putrefaction. By far the best contrivance for this purpose is the well-boat, in which fish may be brought to the place of sale even in a live state. In many maritime districts, where fish can be got in abundance, a species of refinement in taste, or at least a departure from the simplicity of nature, prevails, to gratify which the fish are kept for some days until they begin to putrefy.

"When used in this state, they are far from disagreeable, unless to the organs of smell. Where fish can be procured only at certain seasons of the year, various methods have been devised to preserve them during the periods of scarcity. The simplest of these processes is to *dry* them in the sun. They are then used either raw or boiled, and not unfrequently, in some of the poorer districts of the north of Europe, they are ground into powder, to be afterwards formed into bread. But by far the most successful method of preserving fish, and the one in daily use, is by means of salt. For this purpose they are packed with salt in barrels, as soon after being taken as possible. In this manner are herrings, pilchards, cod, and salmon, as well as many other kinds of esculent fish, preserved. The fish, in many instances, after having been salted in vessels constructed for the purpose, are exposed to the air on a gravelly beach, or in a house,

and dried. Cod, ling and tusk, so prepared, are termed in Scotland salt fish. Salmon in this state is called kipper; and haddocks are usually denominated by the name of the place where they have been cured. After being steeped in salt, herrings are in many places hung up in houses made for the purpose, and dried with the smoke of wood. In this state they are sent to market under the name of red herrings. Although salt is generally employed in the preservation of fish, whether intended to be kept moist or to be dried, vinegar in certain cases is added. It can only, however, be employed in the preservation of those fish to which the acid is served as a sauce. By these processes of salting, smoking, and drying, the digestibility of fish is considerably impaired; although in some instances they may thereby be rendered more palatable and digestible."

Drink, When to.—A few general rules which have been laid down on the subject of drinking cannot fail to be useful to many, and the opportunity may be taken to remark that even in regard to so innocent a beverage as cold water a great many people are guilty of drinking to excess. There are many complaints which have no other origin than the pouring of water, beyond the needs of nature, down the throat, and this, apparently harmless as it is, has proved extremely prejudicial to health till the practice was broken off.

Drink, in some form or other, is indispensable to the solution and digestion of food, and to repair the waste which our fluids are incessantly suffering. In the use of liquid, as of solid food, desire is the best guide.

We ought to drink only when we are thirsty, and to desist when our thirst is quenched. The more we eat, and the drier our food is, the more we ought to drink in moderation.

The phlegmatic require less drink than the sanguine and choleric, the sedentary than the laborious, and all persons need less in winter than in summer.

To drink immediately before a meal is improper, because the stomach is thereby distended and the gastric juice diluted, and digestion, consequently, cannot proceed in so favourable and perfect a manner. Hence, to avoid the necessity of drinking, one should not take violent exercise before dinner. It is also somewhat objectionable to drink much during the time of taking food, as the same consequences ensue as from drinking directly before a meal. To take a small quantity of drink at time of meals is natural and proper, but a large proportion of fluid swallowed at this period renders the stomach incapable of receiving the due portion of aliment, and impedes the digestive process.

Drinking, Excessive Eating and.—See EXCESS IN EATING AND DRINKING.

Drinking Water.—Certain conditions must be fulfilled by all water for drinking. It should be without taste, and it must have no smell, even when warm. It should be perfectly clear, and neither cloudy nor yellowish. It must always contain air dissolved in it. This air consists of three gases—nitrogen, oxygen, and carbonic acid. Boiled water, in consequence of its having lost its gases, is flat and insipid. From two to five cubic inches of gas should be held in solution in every 100 cubic inches of water.

Water should also contain certain mineral matters dissolved in it. The chief of these is carbonate of lime, but sulphates, chlorides, and nitrates of sodium, magnesium, etc., are likewise present. But these dissolved mineral matters need not exceed a few grains, and certainly should not amount to 30 grains in the imperial gallon of water, which weighs 10 lbs., or 70,000 grains.

Dropsy (*Lat. hydrops*, dropsy; formerly called hydropsy).—Dropsy is a preternatural collection of serous or watery fluid in the cellular membrane, beneath the skin, or in different cavities of the body, and receives

different technical appellations according to the particular situation in which it is lodged. The chief varieties are—

1. Dropsy of the cellular membrane, appearing on the surface of the body, under the skin, either generally or partially. It is called *Anasarca* when general, *Edema* when partial.

2. Dropsy of the belly, that is, in the cavity of the abdomen; called *Ascites*.

3. Dropsy, or water, in the chest; called *Hydrothorax*.

4. Dropsy of the head; called *Hydrocephalus*.

5. Dropsy of the scrotal bag; called *Hydrocele*.

Dropsy, under whatever form it takes place, is in most instances a disease of debility. Its general causes are those which induce debility, either general or local, such as protracted fevers; long exposure to cold and moist atmospheres; excessive labour; unkindly child-bearing; excessive use of ardent spirits; habitual indigestion; great loss of blood; drinking cold water when heated; and insufficient or innutritious and indigestible food. Positive disease in some important organ is a frequent cause, particularly disease in the heart, digestive tube and liver.

The immediate cause of all kinds of dropsy is, either a profuse exhalation on the part of the small arteries and veins of the dropsical part, or a want of action in the absorbing vessels; or both may be united.

Dropsy is always a formidable, and often a highly dangerous, disease. Its acute forms, though attended with the most urgent symptoms, are, in general, less unfavourable than most of its chronic forms, because in the former, though the disordered actions may be very intense and dangerous, yet they are more under the control of remedial agents, and they often do not depend on any irreparable vice of the constitution, whereas the latter are the sign and the result of deep-seated and surely advancing disease. Of course the prognosis in any particular case must entirely depend on the seat and nature of the disease of which it is the sequent.

Dropsy, Treatment of.—There is no disease which requires a more varied treatment than dropsy, because, like fever, dropsy may exist in, and be essentially connected with, diametrically opposite morbid conditions of the system. The principal means of evacuating the accumulated fluid in all dropsies are by the employment of certain purgative and diuretic medicines, and by scarification, or other cutaneous drains. Elaterium, cream of tartar, black hellebore, the inner bark of the elder tree, gamboge, and senega root are generally considered to be the most efficacious purgatives in this disease; and foxglove, squill, meadow saffron, nitrate of potash, subcarbonate of potash, and hedge-hyssop to be the most valuable diuretics. Cream of tartar has been a favourite medicine in dropsy with many celebrated physicians. From one drachm to half an ounce of it, mixed with ten grains of powdered ginger, may be given as a cathartic; it may be combined with two grains of gamboge, and given in the same way. Dr. Home, of Edinburgh, has observed that it radically cured fourteen patients out of twenty on whom he tried it. Mixed with a large quantity of water, it quenches the thirst very pleasantly, and the patient should, therefore, take this drink as a common beverage. Black hellebore has also been highly praised. The diet, in all dropsical cases, ought to be nourishing, that food being selected which is easiest of digestion. The pungent aromatic vegetables are also proper, such as garlic, onions, cresses, horse-radish, etc.; and the patient's strong desire for drink may be freely gratified, for which purpose cream of tartar dissolved in a large quantity of water, butter-milk, table-beer, weak cider, or cider mixed with water, will be among the most useful beverages he can resort to. After the water has been evacuated, we must endeavour to invigorate the constitution by the use of bitter and metallic tonics, with aromatics, regular exercise, change of air, and the cold bath.

Drowned, Treatment of the Apparently.—The following very useful
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directions have been published by the Royal National Lifeboat Institution :—

“1. *Preliminary Acts.*—Send immediately for medical assistance, blankets, and dry clothing, but proceed to treat the patient *instantly* on the spot, in the open air, with the face downward, whether on shore or afloat, exposing the face, neck, and chest to the wind, except in severe weather, and removing all tight clothing from the neck and chest, especially the braces. The points to be aimed at are—first and *immediately*, the restoration of breathing; and secondly, after breathing is restored, the promotion of warmth and circulation.

“2. *To Restore Breathing.*—*To Clear the Throat.* Place the patient on the floor or ground with the face downwards, and one of the arms under the forehead, in which position all fluids will more readily escape by the mouth, and the tongue itself will fall forward, leaving the entrance into the windpipe free. Assist this operation by wiping and cleansing the mouth. If satisfactory breathing commences, use the treatment described below to promote warmth. If there be only slight breathing, or no breathing, or if the breathing fail, then turn the patient well and instantly on the side, supporting the head, and excite the nostrils with snuff, hartshorn, and smelling salts, or tickle the throat with a feather, etc., if they are at hand. Rub the chest and face warm, and dash cold water, or cold and hot water alternately, on them. If there be no success, lose not a moment, but instantly *imitate breathing*. To imitate breathing, replace the patient on the face, raising and supporting the chest well on a folded coat or other article of dress. Turn the body very gently on the side, and a little beyond, and then briskly on the face, back again, repeating these measures cautiously, efficiently, and perseveringly, about fifteen times in the minute, or once every four or five seconds, occasionally varying the side. (*By placing the patient on the chest, the weight of the body forces the air out; when turned on the side, this pressure is removed, and air enters the chest.*) On each occasion



BREATHING IMITATED BY DR. SYLVESTER'S METHOD. THE ACT OF INSPIRATION.

that the body is replaced on its face, make uniform but efficient pressure with brisk movement on the back between and below the shoulder-blades or bones on each side, removing the pressure immediately before turning the body on the side. During the whole of the operations let one person attend solely to the movements of the head and of the arm placed under it. The result

is *respiration* or *natural breathing*, and, if not too late, *life*. Whilst the above operations are being proceeded with, dry the hands and feet, and as soon as dry blankets or clothing can be procured, strip the body, and cover or gradually reclothe it, but take care not to interfere with the efforts to restore breathing.

"3. *Sylvester's Method of Imitating*



BREATHING IMITATED BY DR. SYLVESTER'S METHOD. THE ACT OF EXPIRATION.



DR. MARSHALL HALL'S METHOD FOR THE RESTORATION OF THE APPARENTLY DROWNED.
THE ACT OF INSPIRATION.

Breathing.—Should these efforts not prove successful in the course of from two to five minutes, proceed to imitate breathing by Dr. Sylvester's method, as follows: Place the head and the back on a flat surface inclined a little upwards from the feet; raise and support the head and shoulders on a small firm cushion or folded article of dress placed under the shoulder-blades. Draw

forward the patient's tongue, and keep it projecting beyond the lips—an elastic band over the tongue and under the chin will answer the purpose, or a piece of string or tape may be tied around them, or by raising the lower jaw the teeth may be made to retain the tongue in that position—and remove all tight clothing from about the neck and chest, especially the braces. *To imi-*



DR. MARSHALL HALL'S METHOD FOR THE RESTORATION OF THE APPARENTLY DROWNED.
THE ACT OF EXPIRATION.

tate the movements of breathing: standing at the patient's head, grasp the arms just above the elbows, and draw the arms gently and steadily upwards above the head, and keep them stretched upwards for two seconds. (By this means air is drawn into the lungs.) Then turn down the patient's arms, and press them gently and firmly for two seconds against the sides of the chest. (By this means air is pressed out of the lungs.) Repeat these measures alternately, deliberately, and perseveringly, about fifteen times in a minute, until a spontaneous effort to respire is perceived, immediately upon which cease to imitate the movements of breathing, and proceed to induce circulation and warmth.

"4. *Treatment after Natural Breathing has been Restored.*—To promote warmth and circulation, commence rubbing the limbs upwards, with firm grasping pressure and energy, using handkerchiefs, flannels, etc. (By this measure the blood is propelled along the veins towards the heart.) The friction must be continued under the blanket or over the dry clothing. Promote the warmth of the body by the application of hot flannels or bottles, bladders of hot water, heated bricks, etc., to the pit of the stomach, the arm-pits, between the thighs, and to the soles of the feet. On the restoration of life, a teaspoonful of warm water should be given, and then, if the power of swallowing have returned, small quantities of wine, warm brandy-and-water, or coffee should be administered. The patient should be kept in bed, and a disposition to sleep encouraged.

"5. *General Observations.*—The above treatment should be persevered in for some hours, as it is an erroneous opinion that persons are irrecoverable because life does not soon make its appearance, persons having been restored after persevering for many hours.

"6. *Cautions.*—Prevent unnecessary crowding of persons round the body, especially if in an apartment. Avoid rough usage, and do not allow the body to remain on the back unless the tongue is secured. Under

no circumstances hold the body up by the feet. On no account place the body in a warm bath unless under medical direction, and even then it should only be employed as a momentary excitant."

Drowned, Treatment of the Apparently, Howard's.—A method of treating the apparently drowned, said to be in many points superior to that just described, has been invented by Dr. Howard, of New York. It has received the national prize of the American Medical Association, and has been adopted by the Life-saving Society of New York. This "direct method," as Dr. Howard calls it, has two positions:—

1. *To Pump and Drain Fluids from Lungs and Stomach.*—This is done by placing the patient face downward over a hard roll of clothing, so that the pit of the stomach is the highest point, while the mouth is the lowest. The operator supplements the pressure of his hands upon the back of the patient, above the roll, if necessary, with all the weight and force at his command.

2. *For Artificial Breathing.*—The patient, whose clothing is ripped open from the waist, is laid upon his back, and the pit of the stomach is made the highest point by a hard roll of clothing beneath the back, while the head is the lowest part. The wrists are crossed behind the head: these a second person, if present, pins to the ground with one hand, while with the other the tongue is held forward by a piece of dry rag. The greatest possible expansion of the chest is thus obtained. The operator, kneeling astride the patient, grasps the most compressible part of the chest, on each side of the pit of the stomach, and, using his knees as a pivot, throws forward, slowly and steadily, his whole weight, until his mouth nearly touches the face of the patient. Then, by a final push, he throws himself back to his first erect kneeling position. By the sudden removal of the compressing force, the elastic ribs spring back to their original position, and by this bellows action the air rushes into and is forced out of the chest alternately, as

in natural breathing. Success may attend this process in a few minutes, but hope of a favourable result ought not to be given up under an hour.

In addition to its superior effectiveness, Dr. Howard claims for this method the conspicuous advantage of unequalled simplicity. It is usually found that one of the most notable facts connected with cases of drowning is the absence of medical aid at the critical moment. Now, experience has shown that this method can easily be understood by the most illiterate persons, and may be carried into execution anywhere, with or without a doctor.

Drowning.—In a case of pure drowning, the individual first sinks to a certain depth, and then ascends to the surface of the water, where, if he be not a good swimmer, he struggles to clear his lungs and mouth, and to obtain fresh air. As water is generally taken in with the inspired air, the patient sinks again for a short distance, and then by his exertions again succeeds in reaching the surface. These struggles are repeated until the lungs and stomach are filled with water, and the general specific gravity of the body is increased. The body then sinks to the bottom of the water.

The duration of this contest for life will vary according to the sex, age, strength, and general condition of the individual. Fat persons float more readily than those who have large bones without any unusual amount of adipose tissue. Women and children float longer than adult males, their skeletons being smaller, and the fat more abundant.

After the final submersion, the dying individual still endeavours to breathe, and the remaining portion of air is forced out from the lungs by the entrance of more water, and rises in bubbles. Death is preceded by convulsive movements of the extremities, the patient having by this time become unconscious and insensible. According to Dr. Taylor, who accidentally experienced all the phenomena of drowning up to this point, "there is not the least sensation of pain,

and, as in other cases of asphyxia, if the individual recover, there is a total unconsciousness of suffering during the period when the access of air was cut off from the lungs."

The cause of death in cases like the above is *apnoea*, or suffocation. When the air no longer enters the lungs, the venous blood which passes through these organs is not fitted, in the absence of oxygen, which alters dark and venous into bright red and arterial blood, to keep up the nutrition of the various organs of the body. This arrest in nutrition is indicated by unconsciousness and convulsions, by palsy of the muscles, including those of respiration, cessation of the action of the lungs, and, finally, stoppage of the heart's movement.

In cases of drowning, however, death is not always due to simple *apnoea*. Strong individuals, who struggle much at the surface of the water, and make violent muscular efforts to save themselves, die as much from exhaustion as from suffocation. Weak and delicate individuals, on the other hand, may die from syncope, shock, or sheer fright. Again, in diseased or aged people, cold and intense mental excitement may cause apoplexy, or arrest the action of a disordered heart. In consequence of the body falling upon some hard mass before it reaches the water, *apnoea* may be complicated by concussion or compression of the brain, or severe injury of some other important organ.

The question as to how long a human being may be submerged and yet be recoverable, has not yet been clearly settled. According to the officers of the Royal Humane Society, persons who have been under water for more than four or five minutes do not generally recover. But, on the other hand, cases have been reported in which recovery took place after submersion lasting for fourteen minutes, and even half an hour. According to Dr. Taylor, however, the recorded cases of restoration after submersion for half an hour or upwards are to be regarded as "extravagant fables."

Drowning, Appearances Caused by.—The following are the ap-

pearances generally presented by a body which has been recovered shortly after death by drowning: the surface of the body cold and of a white colour, mottled here and there by large patches of lividity; the face also pallid; the jaws closed, and the lips and nostrils covered by a frothy foam; the tongue swollen, but not protruded; the eyes half open, and the upper lids livid and somewhat swollen; the knees and elbows bent; the hands clenched, and mud or sand, and sometimes portions of weed, found included in their grasp; the skin of the fingers is sometimes excoriated, and mud or sand is found underneath the nails. The stomach and air-passages, and sometimes the lungs, contain much water. The vessels of the lungs are engorged with black fluid blood. All the important internal organs are much congested. The right side of the heart contains much more blood than the left side.

In a body that has been in the water for a long time, general putrefaction has taken place. The skin, where not covered by clothes, is of a green or blue colour, and the face much swollen and distorted.

The gases formed by putrefaction and decomposition of the tissues collect and render the body lighter than its bulk of water, so that it rises to the surface and floats there. The period at which the drowned body rises varies according to the depth of the water, the character of the water—whether it be salt or fresh—and its temperature.

Drowning, Inquiries into Death by.—

In inquiries as to how a body found in water came to its death—whether, in the first place, it was due or not to drowning; and, next, whether in the former case the drowning was accidental, suicidal, or homicidal,—great importance is attached to the presence or absence of the following post-mortem appearances: Excoriations of the fingers; sand or mud under the nails; portions of water-plants or mud grasped in the hand; a rough and contracted skin—the goose skin; water in the stomach, especially when this contains plants, duck-

weed, and other substances resembling those which exist in the water from which the body has been taken; froth on the mouth and nostrils; mucous froth, containing sand or mud, in the air-passages; water in the lungs.

Drum-head.—The drum-head, otherwise called the *membrana tympani*, is that part of the ear forming the partition between the external ear and the middle ear, or drum cavity. The drum-head is popularly called the drum, but this it not a

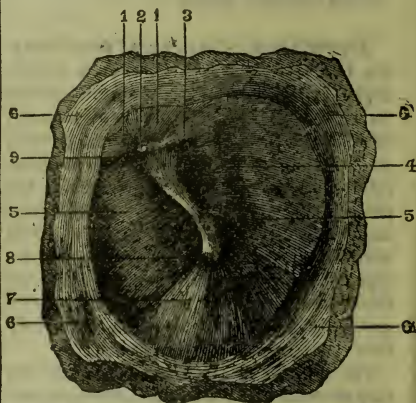


FIG. 1. THE OUTER SURFACE OF THE DRUM-HEAD.

Magnified about 3½ times.

strictly correct term to apply to it. It is really the outer wall of the drum. The latter name is applied only to the cavity of the drum, or middle ear.

In the accompanying illustrations, Fig. 1 represents the outer surface of the drum-head: 1, the flaccid part of the drum-head; 2, short process; 3, the back fold of the drum-head; 4, the anvil's long and descending limb shining through from behind the drum-membrane; 5, 5, the true membrane; 6, 6, 6, inner end of bony canal, forming frame for drum-head; 7, the pyramid of light; 8, lower part of the hammer; 9, the front fold of the drum-head.

The inner surface of the drum-head is shown in Fig. 2: 1, short limb of anvil attached to back part of outer bony wall of tympanic cavity; 2, body of anvil bone; 3, head of hammer bone; 4, neck of hammer; 5-11, chorda tympani nerve. This marks also the boundary line of the pockets, and folds of drum-head. The latter are shown in Fig. 1, at 1 and 5; 6, front part of drum membrane; 7, 8, bony frame around drum-head; 9, the lower part of handle of

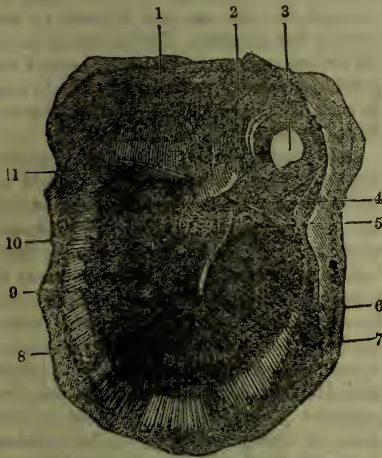


FIG. 2. THE INNER SURFACE OF THE DRUM-HEAD OF MAN.

Magnified about $3\frac{1}{2}$ times.

hammer bone; 10, lower part of long limb of anvil bone. To the point 10 the head of the stirrup is attached.

Drum-head, Growth of Fungi on.—Among the causes of inflammation of the drum-head, the growth of fungi and swabbing of the ear require special mention. The latter irritates by packing back upon the drum-head masses of wax and dead skin, which were never intended to remain in the ear.

The growth of the *fungus aspergillus* on the drum-head and the wall of the auditory canal is not uncommon. The cause of it is by no means neglect of the ear; it is usually one of the results of too much swabbing and picking the ear. This causes irritation of and discharge from the skin of the canal, and the fungus is thus invited to grow in the ear as the small quantities of discharge putrefy. The fungus by instinct seeks a secluded spot for growing, and is thus led to grow first and chiefly on the drum-head, which forms the bottom of the auditory canal.

The attack thus made by the fungus on the delicate skin of the drum-head soon inflames the latter. Unfortunately, the worst thing which the patient can do is now usually done, for oil is poured into the ear. This feeds the fungus; in fact, many cases of the growth of this fungus are directly traceable to the use of oil for some previous ear-disease. The oil having been allowed to remain in the ear until it has become rancid, the fungus, of course, seeks the ear as a favourable place for growing.

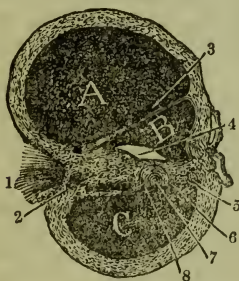
One of the best forms of treatment for an ear infested by the *fungus aspergillus* is syringing with tepid or warm water. This not only allays pain, but it destroys and removes the parasite.

Drum-head, Inflammation in.—Inflammation in the drum-head is sometimes excited by the entrance of cold water into the external ear. A similar inflammation may be excited by the entrance of very cold air into the ear. But the former is the cause of a number of cases of ear disease, especially in boys, after their prolonged swimming in the sea or river in summer time. Girls, too, who take to swimming, like their brothers, are thus exposed to the evil results of too much cold-water bathing. They should be very careful not to remain too long in the water.

Pain has been often alluded to already in the consideration given to the various diseases of the external ear. But as the middle ear, especially the drum-cavity, is the part of the ear most frequently attacked

by inflammation, the cause of ear-ache may be said to lie usually in that cavity. Excepting boils in the ear, no pain is equal in severity to the excruciating ear-ache produced by an inflammation in the cavity of the drum. It is here that most ear-aches in children arise.

The causes of this disease of the ear in childhood are chiefly scarlet fever and measles. Teething, whooping-cough, and severe colds in the head or chest also furnish a certain number of cases of ear-ache, *i.e.*, inflammation of the drum. Inflammations of the drum in adults are produced by exposure to cold, and the consequent "catching cold." It may also attend



SECTION OF COCHLEAR CANAL IN PROFILE.
Magnified 20 times. (Modified from Hagen.)

pneumonia and other lung diseases in the adult.

Very often the pain is cut short, both in adults and children, by the spontaneous rupture of the drum and the discharge of matter.

The natural question arises, "What is to be done to cure ear-ache arising from inflammation in the drum?"

In the early stages of ear-ache from closed Eustachian tube and congested drum-cavity, a vigorous blow of the nose—the air being held in as much as possible, so as to force it backward into the throat—may give relief by opening the Eustachian tube. However, the pain may not be entirely due to the closure of the tube, but to absolute inflammation of the drum-cavity. The blowing

of the nose would, of course, now fail to give all the relief desired, and the pain would soon return, especially towards night, with greater severity, if the cavity of the drum be inflamed. Much relief will be obtained by syringing the ear gently with very warm water, or very warm water may be poured into the ear from a spoon. Sometimes breathing into the ear with the mouth wide open and close to the ear of the sufferer will give relief to ear-ache. In addition to these methods, warm water and laudanum, equal parts of each, may be dropped into the ear, and allowed to rest there a few minutes. Cloths wrung out of very warm water may be placed around the painful ear, *but never over it*. If laid over it, such dressings tend to produce "proud flesh" in the ear.

But beyond these modes of domestic treatment for ear-ache no one should go without consulting some one who understands the structure of the ear and the treatment of the disease. In the accompanying illustration, a section of the cochlear canal in profile are shown: 1, indicates the nerve of hearing; 2, the bony shelf through which the nerve passes on its way to Corti's organ; A, vestibular stairway, in its natural condition, filled with water. Through this, impressions pass from the vestibule to the organ of Corti, 8 and 6; B, the cochlear duct, also filled with water, in which the organ of Corti lies; C, the tympanic stairway, ending at round window; 3, the membrane of Reissner; 4, Corti's membrane; 5, attachment of basilar membrane to outer wall of cochlea; 7, blood-vessel cut across.

Drum-head, Injuries and Diseases of.—The drum-head, as might be supposed from its thinness and comparatively exposed position, is liable to injuries, producing in it perforation, rupture, and inflammation. A perforation or rupture in this delicate membrane is not as *directly* injurious either to hearing or to health as is generally supposed. In some respects a simple perforation in the drum-head is of no consequence, as it will heal rapidly in a

healthy membrane. Indeed, some forms of deafness are cured by a perforation in the drum-head.

The most common forces which produce accidental perforation of the drum-head are concussion in the form of unexpected explosions and boxes on the ear. These accidents are common among soldiery, spectators at military reviews, and sportsmen, and they have occurred by the sudden explosion of gas-bags used in chemical experiments. In order to provide against such accidents, the soldier, during heavy cannonading, opens his mouth, so as to allow of an equal tension of air on each side of his drum-head through the Eustachian tube. Wearing cotton in the ears at such times has also been supposed to protect the drum-head from some of the force of concussion. The sudden explosion of gas-bags, or of many other accidental explosions, can hardly be guarded against, as far as the ear is concerned. In the event of such an explosion, if the ear seems to be numbed, it should be examined immediately by an expert.

A word of caution here, both to physician and patient. In all such cases of either supposed or ascertained accidental ruptures, *nothing should be put into the ear*. In all such cases, simply protect the mouth of the canal with a little dry cotton, and it will be found that, in the vast majority of cases, perhaps in all, the ruptured drum-head will heal, and if the nerve of hearing has not been injured by the concussion which has produced the perforation in the membranes, the hearing will not have been injured. It is altogether different when the rupture of the drum-head has been produced by disease, and when a running from that ear continues. The drops will then do the more good the further into the ear they penetrate.

Another force productive of rupture of the drum-head, quite common among brutal people, is a box on the ear: this is inflicted not only upon children, but we have observed an instance of such an injury to the drum of a man, produced by a blow over the ear given in rude play. The *treatment* of such cases is the same as in the above.

There is another class of injuries to the drum, produced by the accidental entrance of a long and sharp instrument into the canal. Thus whilst scratching one's ear with a pin, thin penholder, pencil, ear-pick, or any other similar object, the elbow may be jogged in various ways, and the pointed instrument being so very near the drum-head, the latter is quickly perforated. This, as a rule, causes a sharp dart of pain. Great care should be exerted to avoid all risks of perforating the drum, and one way to accomplish this will be to most sedulously avoid a habit, entirely too common, of scratching the ear with pins, hair-pins, and ear-picks, or, in fact, with anything but the finger.

Drum of Ear.—See MIDDLE EAR.

Drum of Ear, Lancing.—See LANCING DRUM OF EAR.

Drunkenness, Cure for.—Drunkenness is such an insufferable despotism, that not more than one in a million has force of character enough to break the fetters and live thereafter a free man. The father of the distinguished divine, Newman Hall, cured himself of habitual drunkenness by taking night and morning, for several months, the following preparation: five grains of sulphate of iron (copperas), ten grains of magnesia, eleven grains of peppermint water, spirit of nutmeg, one drachm; it prevents that physical and moral prostration which follows the sudden leaving off of the accustomed dram.

Dry Tetter.—See PSORIASIS.

Duck.—See BIRDS AS FOOD.

Dumb-Bell Exercises.—In gymnastic schools the pupils are put through a regular course of progressive exercises at the command of the teacher. For home practice, however, it will be sufficient if we merely indicate these, and show how the bells may be most efficiently employed.

First, then, we take up the bells. The

raising and swinging of the bells take place from the standing position. Stoop, seize both bells, recover the upright position, and raise them above the head. Repeat this by lowering the bells to the ground, bending the knees, and then rising on the upright position. Moving the bells in horizontal and slanting planes forms the next exercise, and the pupil then proceeds to the *circular movements*, first with one and then with the other, and finally with both at once. These movements are succeeded by various *elbow exercises*—the fore-arm thrown out or raised and brought slowly back, the other arm swerving in like manner, and then both arms together.

The spread arms and the head swing. Care must be taken in all these movements to prevent the bells clashing or striking against each other. A little practice will soon accustom the learner to so move his arms in graceful sweeps and curves as to avoid all chances of collision. As a rule, the elbows should be close to the sides at the starting of each movement.

The shoulder feats then follow. The motions are sufficiently indicated by the names given to them, the arms being extended horizontally in the former, and brought above the head in the latter, the arms being still straightened, each position of the body following in successive order till we get again the arms extended in spread-eagle fashion; hence the exercises may be repeated again and again. The first of the four movements included in the shoulder feats is what is called the *moving motion*, in which the arms are brought straight to the front horizontally; the second is the *backward swing*, in which the arms are thrown back, the horizontal position being still preserved; the third the *front present*, in which the dumb-bells are brought close to the body in front of the chest; and the fourth the *extension*, in which the arms are again thrown back, the dumb-bells being held somewhat lower than the waist. It will be seen that the gradations from one to the other are easy and natural.

From the third position of the shoulder

feats the learner is led to swing the arms and clang the bells behind the back. This is a favourite and useful exercise, and is known as "The Mantlet." After a little practice, he will be able to swing his arms and clap the palms of his hands together behind his back, of course in this case without the dumb-bells.

The thrusting or striking motions are thus performed: At starting, keep the elbows close to the sides, bend the right arm, and hold the bell to the chest. At the same instant raise the left high above the head. Reverse the arms and repeat the motion. Repeat the exercise again and again till perfect. The above comprise all the movements of the dumb-bell exercise that can be taught on paper. It does not seem, at first sight, that much can be taught; but if the reading is combined with real practice, the learner will soon find that he has acquired absolute knowledge.

Dumb-Bells, Use of.—Dumb-bell exercises are intended to strengthen the muscles which protrude and draw back the arms. But if heavy dumb-bells are used, another thing is called into play, viz., the support of their weight, whether close to the chest, or at a distance from the body; and that means the use of another set of muscles, which will not be exercised—only strained. So, too, Indian clubs; first-rate things they are for opening out the chest, but if they are too heavy, they only drag and strain the muscles, speedily tiring them out, instead of exercising them. But the exercises are easier with clubs than without them; with them, too, several muscles are called into play which would not be exercised without them, and so clubs, light ones—or, at all events, not heavy ones, which tire the individual during exercise by weight only—are preferable to dumb-bells.

Dumb-bells are less in repute than they used to be; but when they are not too heavy, and the movements gone through are not too eccentric or difficult, they are very useful. There is harm occasionally from their weight being disproportionate to the weak frames

which use them; in which case they pull down the shoulders by dint of mere dragging. When this or any other exercise is resorted to in the house, the windows ought to be thrown open so as to make the nearest possible approach to the open air.

For preliminary practice the dumb-bells should not exceed six pounds each in weight. For young people four pounds will be sufficient to commence with. We all know the form of dumb-bells—masses of iron joined by a handle usually covered with leather. For the use of boys and girls of slight figure and strength they are sometimes made with wooden handles; but those of cast iron, properly weighted and covered, are the best.

Duodenum (*Lat.* duodeni, twelve, that is to say, inches, so called from the length of the part).—The name given to the first part of the small intestine which is joined to the stomach, and is about eight or ten inches long.

Dupuytren's Splint.—See POTTS'S FRACTURE.

Dura Mater.—See NERVES.

Duration of Life.—The duration of life, in general, depends upon the following points:—

1. On the quantity of the vital power which is inherent in the individual. A greater supply of the vital power will naturally last much longer and be later consumed than a smaller. Now we know, from varied experience, that the vital power has a greater affinity to some bodies, and to others a less; that it abounds much more in some than in others; and that many external causes tend to weaken it and many to nourish it. This, therefore, gives us the first and most important ground of the difference in the duration of life.

2. But, besides the vital power, the organs also are consumed and wasted by living; and, consequently, a total consumption must take place later in a body the organs of which are strong than in one of a deli-

cate structure more liable to dissolution. Besides, the operation of life itself requires the continual agency of certain organs, which we therefore call the vital organs. If these be diseased, or unfit for use, life cannot continue. A certain firmness of organization and a proper condition of the vital organs form the second ground on which the duration of life depends.

3. The process of consumption may be carried on more slowly or more rapidly; and consequently, the duration of it, or what we call life, even when the powers and organs are perfectly alike, will be longer or shorter in proportion to the quickness or slowness of the operation, just as a candle lighted at both ends at the same time burns twice as fast as one lighted in the usual manner, or as a light in oxygen is consumed ten times faster than one of the same kind in ordinary air, because by that medium the process of consumption is increased and accelerated in a tenfold proportion. This affords the third ground of difference in the duration of life.

4. As renovation of what is lost and continual regeneration are the principal means of counteracting the consumption, those bodies which internally and externally have the best means of regenerating themselves with most ease and in the greatest perfection will naturally be of longer duration than those which are destitute of that advantage.

In short, the duration of life in a being will be proportioned to the innate quantity of vital power, the greater or less firmness of its organs, the speedier or slower consumption, and perfect or imperfect restoration. All ideas on the prolongation of life, as well as all the means which have been or which may be proposed on the subject, can be brought under these four classes, and be examined upon these principles.

How long, it has been asked, can men live if exempted and protected from all the influences tending to extinguish life prematurely? What is the term, if any, which Divine Providence has affixed to the duration of human life?

Considerable numbers, as every one knows from his own experience, reach the age of eighty or ninety. A few live beyond these years, and nearly or quite touch one hundred. A small number also live even longer than one hundred years.

All the recorded stories, no doubt, of persons living one hundred and fifty to two hundred years and upwards, such as Jenkyns and Old Parr, must in the present state of our knowledge be regarded as myths. The very numerous cases claiming an age somewhat beyond one hundred are now, however, proved to have no inherent impossibility.—*See also* COMPARATIVE LONGEVITY, LONGEVITY, etc.

Duration of Life in Various Occupations.—As everybody would like to know that he has a prospect of long life, everybody has a certain curiosity in regard to the statements of science concerning the effect of his own work on the duration of life. There are a good many facts going the rounds, and if taken with allowances for the circumstances, these facts are valuable. But there is so great a contradiction between the statements of different authors that the most meagre statement is perhaps the safest.

From Hirt's table a typical trade or two have been selected to represent each period of life, dividing life into periods of five years. The selection is of course arbitrary.

Among the operatives who die on the average before the age of forty years are found porcelain-turners, stone-cutters, and female mirror-makers.

Under forty-five, goldsmiths, lead and quicksilver miners.

Under fifty, cabinet-makers and operatives in cotton mills—not very wholesome and not particularly hurtful occupations.

Under fifty-five come some trades which one would have been inclined to put much lower. Needle-polishers are said to average fifty, file-cutters fifty-four, engravers fifty-four and six-tenths, and so forth. It is possible that a good many classes fall in here simply because it is rather a medium

age at which to die, independently of other circumstances.

Under sixty years of age (also a good medium age on the favourable side) are found blacksmiths, butchers and carpenters, machinists and turners, the watchmaker who measures our life for us, and the gravedigger who takes our measure for the last time.

Under sixty-five it is interesting to find set down the classes of tanners, dyers, gasmen, catgut makers, and bone-boilers—trades which may remind us that long life is not to be attained by shirking disagreeable or offensive tasks.

Above sixty-five only three trades are mentioned.

In Great Britain the rate of mortality among different classes has been estimated by Dr. Farr, who states that the shortest lives are found among earthenware makers, tailors, needle-makers, makers of files and saws, veterinary surgeons and farriers, railway employes, coachmen and cabmen, commercial clerks, butchers, publicans, and innkeepers. A good deal of this mortality is due to habits of excessive drinking and exposure to the weather.

Physicians and surgeons, chemists and druggists, mercers and drapers, hairdressers, barbers, wig-makers and hatters, miners, and some others, have a high, but not an excessively high, rate of mortality. Carvers and gilders suffer less than they did; and manufacturers of wool, silk, and cotton no longer experience an exceptionally high mortality, owing to the zealous efforts made by Lord Shaftesbury and his enlightened colleagues in promoting sanitary legislation.

Among the healthy classes may be named carpenters, wheelwrights, and workers in wood generally, shoemakers, grocers, publishers, and booksellers.

Among the healthiest and longest-lived are the agricultural classes, gamekeepers, barristers, and the clerical profession. But solicitors and Roman Catholic priests in middle and later life form exceptions.

Metal-workers in the aggregate do not

experience the average rate of mortality under forty-five, but after this age the case is reversed; miners have a still higher rate, and both classes have a much higher rate than agricultural labourers.

Duration of Life, "Quarterly Review" on.—In an admirable article that appeared some time since in the *Quarterly Review*, based on the annual reports of the Registrar-General of Births, Deaths, and Marriages, the writer thus ably considers the health of men in various occupations:—

"Dr. Farr," says the reviewer, "has done full justice to the memory of Bernardo Ramazzini, who first collected, towards the latter half of the seventeenth century, a series of careful observations on the diseases of men engaged in different modes of work in the city of Modena; and, different as life on the northern slopes of the Apennines is from life in England at the present day, yet the classification made by Ramazzini was so complete, that it has been of great service to modern investigators into the same subject.

"To commence with those occupations by means of which food and refreshments are distributed to the rest of the community, it is curious to notice, and contrary, we believe, to the ordinary opinion, that the mortality among butchers is greater than the average rate. This is the case whether the butchers carry on their trade in London or in the country. Though butchers out of London enjoy healthier lives than those in London, yet, at all but the earlier ages, whether in the country or in the metropolis, the butcher is a less healthy man than his compeers. At the earlier ages, from fifteen to twenty-five, the health of butchers, both in London and in the country, is better than that of the rest of the population of the same ages. This appears to show that butchers are selected lives: that is to say, that young, strong, and naturally healthy men pass into this class of occupation by a kind of natural selection, but that, as life goes on, and their original vigour declines,

the deleterious influences of their calling gradually affect their health.

"Fishmongers are not more healthy than butchers; but bakers, though this might not have been expected, do not appear to be more unhealthy than the average of their fellow-citizens, except that as they grow older their occupation appears to tell on them.

"For the class of publicans we shall prefer to quote Dr. Farr's own words:—'The numerous useful and, as a body, respectable men who supply the community with drinks, food, and entertainment in inns, are shown to suffer more from fatal diseases than the members of almost any other known class. They might, themselves, institute a strict inquiry into its causes. But there can be little doubt that the deaths will be found due to delirium tremens and the many diseases induced or aggravated by excessive drinking. It seems to be well established that drinking small doses of alcoholic liquors, not only spirits, the most fatal of all the poisons, but wine and beer at frequent intervals without food, is invariably prejudicial. When this is carried on from morning till late hours in the night, few stomachs—few brains—can stand it. The habit of indulgence is slow suicide. The many deaths of publicans appear to prove this. Other trades indulge in the publicans' practice to some extent, and to that extent share the same fate. The dangerous trades are made doubly dangerous by excesses.'

"The clergy generally, whether of the Established Church, whether Dissenting ministers or Roman Catholic priests, have, on an average, good health. It is otherwise with the medical profession. The classes which administer to the health of the body have far less healthy lives than the clergy, and up to the age of forty-five experience a mortality much above the average. The hard struggles of life, anxiety as to success, contact with disease, disturbed rest, are among the causes which appear to lead to this result.

"Chemists and druggists are also less

healthy than the average. So also are commercial clerks, mercers and drapers. Those engaged in the service of railways likewise experience a high rate of mortality. Coachmakers are a fairly healthy class. Wheelwrights, carpenters, joiners, sawyers, and those who work in wood have lives healthier than the average of men. The influence of the occupation on health is clearly shown in the case of the blacksmith, who, carrying on his occupation under much the same circumstances as the wheelwright, not necessarily in the towns, but scattered among the villages and hamlets of the country, is nevertheless not so healthy a man as the wheelwright.

"The health of carvers and of gilders is, on the average, much better than it used to be. But Dr. Farr observes that both the carver and gilder, and the plumber and glazier, require more protection against the metallic poisons, to the influence of which they are exposed in their several callings. How much may be done by care in these matters is shown in the following sentence:—'The wool, silk, and cotton-manufacturing population no longer experience an exceptionally high mortality. Lord Shaftesbury and his enlightened colleagues must be gratified, if not entirely satisfied, with the success that has rewarded their lifelong labours. And it is creditable to the mill-owners to find the health of the men and boys in their employ suffering less than many other people in towns.'

"What has been done for the operatives in these branches of manufacture still remains to be done for those who work up the goods which are the produce of their toil. Tailors and shoemakers still need much to be done for their health. Tailors especially are less healthy than the average, and the health of those employed in the earthenware manufacture especially appears to suffer from their occupation.

"At the age of joining it is bad; but the mortality after the age of thirty-five approaches double the average; it is excessively high; it exceeds the mortality of publicans. What can be done to save the

men dying so fast in the potteries, and engaged in one of the most useful manufactures?"

"Mining is also an unhealthy occupation. Some classes of mining are more dangerous than others; but, in the aggregate miners' lives wear out more rapidly than metalworkers', and both classes are far less healthy than the agricultural labourer. Outdoor occupations, in which there is not an excessive exposure to the vicissitudes of the weather, are, beyond doubt, the healthiest which a man can undertake. Farmers and agricultural labourers are, at the present time, among the healthiest classes in the community. For some reason, which is not exactly understood, the young farmer appears to have a less healthy life than the labourer of the same age. But from the age of thirty-five and upwards the farmer is the healthier of the two. It is to be hoped that an improvement in the condition of the agricultural labourer may be accompanied by an improvement in his health. The health of the largest class of workers in the community is of vast importance to the well-being of the State."

Duration of Pregnancy. — See PREGNANCY, DURATION OF.

Duration of Sleep.—In regard to the lightness of the slumber, and the extent of its duration, there are great variations among different individuals. There are heavy sleepers and light sleepers. There are some who require several hours, and others who only need a few. There is no doubt that many persons have been satisfied with five hours in the twenty-four, which is the amount attributed to John Hunter and Frederick the Great, while on particular emergencies a much shorter sleep seems to have sufficed.

Children sleep much. In old age sleep is usually slight and brief; but in extreme old age there is a sort of return to the sleepiness of childhood.

Duration of Sleep Proper.—Sleep is intended to repair the expenditure

of power in the system consequent upon mental or bodily fatigue, and its duration should, therefore, be proportioned to the loss of vigour actually met with during the preceding period of daily activity. Hence, the time which should be spent in slumber varies with each individual, according to age, temperament, habits, or general health, and, to a smaller extent, with each day's amount of intellectual or physical labour.

In early infancy the active processes of growth and development going on in the budding organism require a correspondingly great amount of repair, which is largely contributed to by frequent slumber, which occupy a majority of the twenty-four hours. The necessity for sleep, which is quite imperative in the case of a young child, becomes gradually less and less pressing until after the age of two or three years is reached, when repose during the night only is required. This tendency should by all means be encouraged, because the benefits of sleep during the day are more than counterbalanced by the disadvantages resulting from privation of exercise in the open air and sunshine.

In the prime of manhood or womanhood the proper period is more readily determined, and is much shorter than that suited to infancy. In advanced life the expenditure of physical and mental power is smaller, and less need of prolonged repose is felt by the system, although in extreme old age or second childhood the body often reverts to its infantile habits of frequent slumber.

During convalescence from any acute malady also, patients should imitate this childish tendency to spend much of the time in sleep, which is one of our most efficient aids in securing a restoration of bodily vigour impaired by disease. Apart from differences of age, we do not by any means all need the same quantity of sleep, and there are individual differences in this respect for which we cannot account. Others, however, are easily explained, as, for example, the fact that nervous, excitable people need more sleep than robust, unimpassionable persons, simply because the

events of each day involve a greater wear and tear of the nervous system in the former.

Habit, which so powerfully modifies almost all the bodily functions, exercises a great influence upon the duration of sleep. We must never forget, however, that although we may occasionally succeed in stifling for a time the complaints of the body at want of sleep, we do not thereby prevent that body from suffering the consequences of its deprivation. Those who, from necessity (as with night watchmen), or from choice, remain awake through the night, learn to feel, it is true, as soon as the habit is well established, no necessity for nocturnal sleep, and yet the enfeebling of their forces and impoverishment of their blood generally goes on uninterruptedly.

The number of hours necessary for sleep varies from six to eight in the twenty-four; many strong persons find six hours enough, while the weakly and the invalid generally require seven hours and a half or eight hours. It should be particularly observed that even the weakly very rarely require more than nine hours' sleep at the utmost, and a longer indulgence will scarcely ever fail to injure them.

Some extraordinary advice has been given, by certain distinguished persons with reference to the time devoted to sleep; but each writer falls into the common blunder of applying a rule to all which he finds good in his own case. Bishop Taylor advises three hours. Wesley suggests six as the least time that will answer. He declares that during his life he never knew any one to retain vigorous health, even for a year, with a less quantity of sleep than six hours, and he thought that women required more than men.

Duration of Sleep, Whewell on.

—It is observed by Dr. Whewell, in his *Bridgewater Treatise*, that "Man, in all nations and ages, has taken his principal rest once in twenty-four hours, and the regularity of this practice seems most suitable to his health, though the duration of

the time allotted to repose is extremely different in different cases. So far as we can judge, this period is of a length beneficial to the human frame, independently of the effect of external agents. In the voyages recently made into high northern latitudes, when the sun did not rise for three months, the crews of the ships were made to adhere with the utmost punctuality to the habit of retiring to rest at nine, and rising at a quarter before six; and they enjoyed, under circumstances apparently the most trying, a state of salubrity quite remarkable. This shows that, according to the common constitution of such men, the cycle of twenty-four hours is very commodious, though not imposed upon them by external circumstances. No one can maintain, with any plausibility, that the period may be lengthened or shortened without limit. We may be tolerably certain that a constantly recurring period of forty-eight hours would be too long for one day of employment, and one period of sleep, with our present faculties; and all whose bodies and minds are tolerably active will probably agree that, independently of habit, a perpetual alternation of eight hours up and four in bed would employ the human powers less advantageously than alternations of sixteen and eight."

Dust in Eye.—See EYE, DUST IN.

Dust in the Air.—Dust in the air, in regard to which Professor Tyndall has done such good service to humanity by pointing out its connection with disease, is composed of an infinite variety of materials, among which the microscope reveals innumerable epithelial scales from the skins of men and animals, hairs, fragments of wool, cotton and flax fibres, pollen grains, splinters of wood, bark, shreds of leaves, particles of coal, soot, sand, earth, and many other articles too numerous or too disgusting to mention. Some of these irritate the lungs mechanically, as, for example, is the case with the angular fragments of anthracite or bitumenous coal,

which cause a peculiar form of lung disease, called miners' consumption. This affection cuts short the days of an immense number of those who work in coal dust, and after death their lungs are found to be filled with sharp particles of coal, which, being inhaled with the breath, become imbedded in the substance of the lung, and there, acting as so many little splinters in the flesh, give rise to innumerable minute boils or abscesses, by which the breathing apparatus is literally riddled with holes, and so much of it destroyed that the poor sufferers die for want of lung enough to properly supply their blood with air.

The fine particles of steel thrown off in grinding saws and other tools give rise to "saw-grinders' consumption," the dust from the clay in potteries to "potters' asthma," and the fragments of wool, flax, etc., in cloth factories, cotton mills, and so forth, to bronchitis and other lung complaints. All these contaminations of pure air seem to have a merely mechanical effect; but such impurities as phosphorus in match factories, lead in white-lead works, copper and brass in foundries—where the latter give rise to "brass-founders' ague"—and especially arsenic from the green wall-paper, chintzes, etc., which should certainly never be used, have a chemical and poisonous influence which it is worth a great deal of pains to avoid.

Most of the victims to these various kinds of dust in the air are really sufferers through ignorance of their injurious or fatal effects; but now that we have pointed out the danger, we trust that none of our readers will allow themselves to be exposed to such deleterious influences; at any rate, without using every precaution which science has devised to diminish the evil results.

Dwelling Houses.—Our habitations through their unscientific construction and the faulty conditions under which they are built are the cause of many evils. Of course, many are prevented by circumstances from selecting the kind of domicile which would be most conducive to health, but even those

whose choice is of the narrowest can avoid certain grave dangers originating in unwholesome habitations if the vital importance of doing so is clearly pointed out to them.

The chief points to be insisted on, when reduced to a minimum, are proper lighting and ventilation, and the disposal of the sewage and house refuse in such a manner that no disastrous results to health and life can possibly arise from imperfectly trapped and ill-ventilated drains and sewers, and undue accumulations in dust-bins. If these points are properly seen to, and the rooms are of a sufficient size for the requirements, from a sanitary point of view, of those who are to inhabit them, all other inconveniences of position, etc., become merely minor evils.

Dysentery (*Gr. dus*, a particle implying evil, hardness, or difficulty; *entera*, the entrails).—Dysentery is a disease of hot climates: within a belt of 35° north and south of the equator. These lands are never free from it. Regions of India, Asia, the unexplored coasts of Africa, South America, and the West Indies, within this belt, are dysentery countries. In the United Kingdom it is rare in the epidemic form, except in military life; but it is common enough as a "scattered" or sporadic disease in the hot season to be classed properly among the diseases of summer.

Dysentery, Causes of.—The epidemic form of dysentery is thought to be due in whole or in part to miasmatic influences connected with the nature of the soil in particular regions; with this, various other exciting causes concur in producing the attack in individual cases. The precise nature of the miasma is unknown, just as the precise nature of the malarial poison is as yet undiscovered. Unlike diarrhoea, dysentery is a disease, not merely a symptom.

Dysentery, Symptoms of.—There is generally a varying amount of fever, with corresponding constitutional disturbance.

The characteristic manifestations of the disease are distressing, twisting, colicky pains in the abdomen, with a constant tormenting desire to have the bowels moved, and violent straining and bearing-down pains; these efforts resulting in the passage of small amounts of mucus or blood, or these commingled—often nothing more. The dysenteric symptoms are usually preceded for a few days by diarrhoea. The duration of the disease is from four to twenty-one days. The acute form may run on into the chronic under unfavourable circumstances.

The structural changes in dysentery consist in inflammation and ulceration of the mucous membrane of the large intestine, especially and most commonly in its lower portion, the glands being especially involved. The restriction of the processes of the disease to this part of the bowel will explain the common limitation of pain, on pressure, to those portions of the surface of the abdomen overlying the large intestine, whilst the inflammation of the mucous membrane of the bowel explains the increased secretion of altered mucus and the presence of blood in the stools. The bearing-down pains and constantly-recurring desire to have the bowels moved are due to the swollen condition of the lining membrane of the bowel, and to spasm of its muscular coat, which is, doubtless, also concerned in producing the violent twisting pains in the abdomen which characterize the disease. There is no reason to believe that this form of dysentery is contagious. It is not usually a highly dangerous malady, except in certain cases. Its course appears to be modified by judicious treatment, and the management of each case should at once be placed in medical hands.

"In every case of dysentery," says Dr. Johnson, "that has ever come within the range of my observation, two functions were invariably disordered from the very outset, and soon drew other derangements in their train. These were the functions of the skin and the liver; or, perspiration and biliary secretion. I defy any one who has atten-

tively regarded this disease at the bedside to produce a single instance in which these functions were carried on in a natural manner at any period of the disease.”

Dysentery, Treatment of.—The diet should be scanty, but nutritious; hot poultices or cold compresses applied to the abdomen, and strict rest enjoined. It is desirable to remove all hardened fæces which may set up irritation, and for this purpose nothing suits so well, or gives the bowels so much relief, as copious injections of warm and very thin gruel. These having been removed, a totally different plan must be adopted; no more copious injections, but enemata of an ounce or two of starch, containing 30 drops of the liquid extract of opium; this may be repeated if necessary. At the same time it is desirable to give internally full doses of ipecacuanha, consisting of not less than from 30 to 60 grains, in any form which may be deemed desirable. It may be repeated in six hours, if necessary. If the patient gets over this, another kind of treatment must begin. Tonics must be given carefully, the bowels attended to, and every sign of relapse closely watched. The diet must then be nourishing, but not bulky. Remedies may be given to prevent the contents of the bowels from putrefying, such as sulphite or hyposulphite of soda or sulphocarbonate of soda, or carboic acid. If dysentery become chronic, change of climate is important, a mild and agreeable atmosphere doing a great good.

Sir Charles Locock says “that in severe dysentery, especially where there is sickness, there is no remedy equal to pure calomel, in full dose,” and recommends at the very outset of the disease to give them three to five grains (according to the age of the patient) of calomel, mixed with an equal quantity of powdered white sugar, and put dry upon the tongue. In three hours after, let the following mixture be administered:—

“Take of compound ipecacuanha powder, five grains; ipecacuanha wine, half a drachm; simple syrup, three drachms;

cinnamon water, nine drachms: to make a mixture. A teaspoonful every three or four hours, first *well* shaking the bottle.”

Dr. Baily, who made this disease his particular study, recommends, in cases where dysentery has continued for several days, a combination of castor-oil and opium—as, for instance: Take of mixture of acacia, three drachms; simple syrup, three drachms; tincture of opium, ten drops (*not* minims); castor-oil, two drachms; cinnamon water, four drachms. Mix and take a spoonful every four hours, first well shaking the bottle. A warm bath, at the *commencement* of the disease, is very efficacious; and a flannel bag, filled with hot table-salt, made hot in the oven, and applied to the bowels, will afford much comfort.

Dyspepsia.—See INDIGESTION, OR DYSPEPSIA.

Dyspepsia, How to Avoid (*Gr.* *du*s, difficulty; *pepto*, I digest).—To be able to sit down to a well-spread table with a good appetite, and to eat to one’s satisfaction three times a day, without any discomfort whatever, is a blessing and a happiness; and yet there are multitudes in apparent good health, who for years have not known what it is to take a single meal without its being followed, within an hour or two, with torments enough to make a man mad: torments which subvert the whole character, sour the disposition, embitter the temper, and turn the sweetest affections into worm-wood and gall. This is dyspepsia. Many a household, once happy, has become a very pandemonium, the husband a tyrant, the wife a virago, an unendurable shrew, from the influence which a dyspeptic stomach has on the mind, the temper, and the heart.

Dyspepsia can be uniformly cured, and always avoided, by the following rules:—1. Eat thrice a day. 2. Not an atom between meals. 3. Nothing after a noon-day dinner but some cold bread and butter and one cup of hot drink. 4. Spend at least half an hour at each meal. 5. Cut up all the food into pea-sized pieces. 6. Never eat so much as

to cause the slightest uncomfortable sensation afterwards. 7. Never work or study hard within half an hour of eating.

Ear.—The ear is the most complicated organ of special sense. Its important parts lie deeply hidden in the hardest bone of the body—the petrous bone; and on this account its complex nature is rendered all the more difficult to study. The external ear, *i.e.*, the *auricle*, or ear of common language, and the auditory canal which leads to the drum-

ratus in man. The front part of the auditory canal, the front half of the drum-head, and part of the Eustachian tube are supposed to be removed. 1, the side of the temple bone cut through; 2, outer surface of temple; 3, upper wall of bony part of hearing canal; 4, ligament holding hammer bone to roof of drum cavity; 5, roof and upper part of drum cavity; 6, semicircular canals; 7, anvil bone; 8, hammer bone; 9, stirrup bone; 10, cochlea, or snail-shell; 11, drum-head cut across, and looked at side-

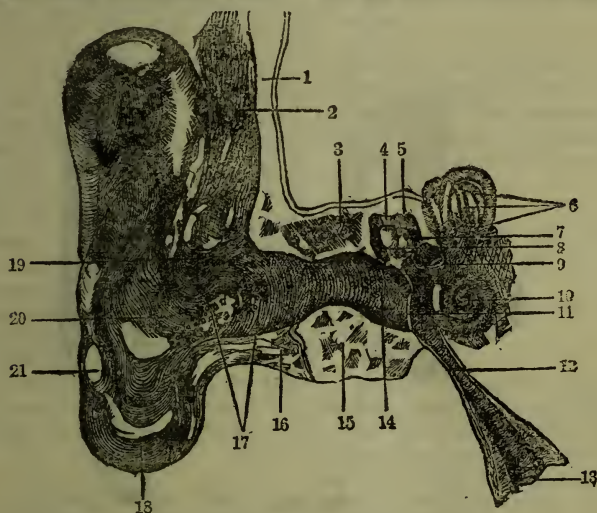


DIAGRAM OF ENTIRE RIGHT AUDITORY APPARATUS.

head, the drum-head itself, and parts of the drum cavity, or tympanum, are visible from without, and easily accessible in the living; but all other parts of the ear are not naturally visible. Furthermore, the dimensions of the various parts of the organ of hearing, excepting the outside appendage, are very small, and in the case of the inner ear, where the nerve of hearing is spread out, they are microscopic.—*See also* EXTERNAL EAR, INTERNAL EAR, MIDDLE EAR, ETC.

In the accompanying engraving is given a diagram of the entire right auditory appa-

ways; 12, isthmus of Eustachian tube; 13, mouth of Eustachian tube, in the throat; 14, the hearing, or auditory, canal; 15, lower wall of bony canal of hearing; 16, lower wall of cartilaginous part of canal at its junction with the bony part; 17, wax glands; 18, lobule; 19, upper wall of cartilaginous part of hearing canal; 20, the mouth of the auditory canal; 21, the antitragus.

Ear and Head, Noises and Ringing in.—*See* NOISES AND RINGING IN EAR AND HEAD.

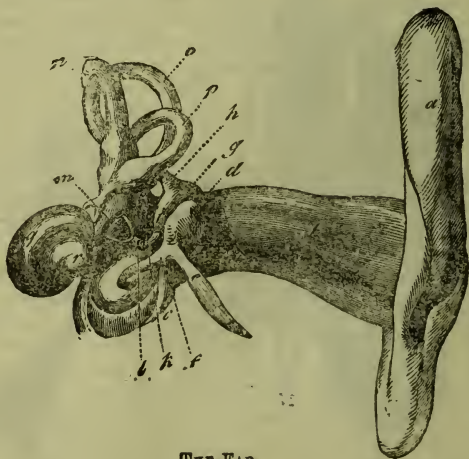
Ear, Boils and Fungi in.—
See BOILS AND FUNGI IN EAR.

Ear, Foreign Bodies in.—If, through any mischance, some foreign body, as a bean or a button, should have found its way into the ear, never poke and push at it. Should it be an insect, turn the head on one side, take hold of the tip of the ear at the top, and pull the ear up a little; this straightens the tube; then pour sweet oil freely into the ear and hold it there for a while the insect will float to the top and

h, its short process; *i*, its long process; *k*, the tubercle for articulation with the head; *l*, the stapes; *m*, the base of the stapes, or that portion which is placed in the fenestra ovalis; *n*, the superior semicircular canal; *o*, the posterior canal; *p*, the horizontal or external; *q*, the first turn of the cochlea; *r*, the apex of the cochlea.

Ear, Insects in.—See INSECTS IN THE EAR.

Ear, Internal, Effects of Con-



THE EAR.

can be removed with the oil. If any hard substance has been put in, a stream of warm water forced in behind with a syringe will drive it out. That side of the head should be held towards the floor, so that the object may fall out. But if it be something that will swell with moisture, as a bean, take the child to a doctor. The accompanying illustration affords a diagrammatic view of the parts composing the organ of hearing: *a*, the pinna; *b*, the external auditory meatus; *d*, the head of the malleus, or hammer bone; *e*, the processus gracilis, or slender process of the malleus; *f*, its handle; *g*, the incus;

cussion on.—See CONCUSSION, EFFECTS OF, ON INTERNAL EAR.

Ear, Syringing the.—See SYRINGING THE EAR.

Earache.—See DRUM-HEAD, INFLAMMATION OF THE.

Ear Disease, Dizziness in.—See DIZZINESS IN EAR DISEASE.

Early Rising.—The benefits of early rising have been greatly exaggerated. People who go to bed late must rise late, if

they are to obtain the full modicum of sleep requisite for health. When this, however, is secured, there should be no lingering abed, as the second sleep, as it is termed, is an indulgence in an indolent practice, and not the satisfaction of a natural want, and is undoubtedly both weakening and stupefying. The moral and physical advantages to children of early rising are admitted, but we doubt whether it is as essential to the health and length of life of grown-up people as many have claimed it to be.

It is generally said that all those who have attained great and green ages have been early risers. Therefore, say others, early rising is a promoter of health ; therefore, it might be whispered, those whose constitutions have carried them through a long life have been able to be early risers. As in many other things, the truth probably lies between the two ; there have been good vital powers on the one hand, and good habits, of which early rising is an indication, on the other. The wrong deduction, however, that early rising is an unmixed good, has occasioned much erroneous practice ; and many a delicate person, either in consequence of the false idea, or badly advised by others, has injured his health materially by perseverance in the practice ; this, however, is more common among the young than among the aged, who require less sleep.

Early Rising, Some Opinions on.—The following are the opinions on early rising of a few authorities who have held extreme views on the subject :—

Said the author of "Ten Years in Eastern Lands" to his Chinese servant, "Did you ever see the sun rise?" "No, sir ; nor have I ever known a man who did." The nations of the old world, from centuries of observation, have learned that it is better not to rise very early.

"When old people have been examined," says Dr. Kitchiner, "with a view to ascertain the causes of their longevity, they have uniformly agreed in one thing only—that they *ALL went to bed early, and rose early.*

'Early to bed, and early to rise,
Will make you healthy, wealthy, and wise.'"

Dean Swift avers "that he never knew any man come to greatness and eminence who lay in bed of a morning. Franklin says that he who rises late may trot all day, and not have overtaken his business at night." He also published an ingenious essay on the advantage of early rising. He called it "An Economical Project," and calculated the saving that might be made in the City of Paris *by using sunshine instead of candles*, at no less than £4,000,000 sterling.

When some one exclaimed to the Duke of Wellington, on being shown the narrow camp-bedstead on which he habitually slept, "There is no room to turn about in it!" the Iron Duke answered, "When a man begins to turn about in his bed, it is time for him to turn out."

Early Stages of Disease.—See DISEASE, EARLY STAGES OF.

Ears, Piercing.—See PIERCING FOR EAR-RINGS.

Earth Closets.—These are contrivances, recently introduced, for superseding water-closets, particularly in country places. In them, instead of pulling the handle and allowing a flood of water to sweep away all matter from the pan into the sewer, the same handle allows, from a hopper, a quantity of dry earth to fall and cover the evacuations. The dry earth completely prevents any smell arising from them, and apparently prevents all further decomposition. After a time the accumulated matters may be removed, and constitute a valuable manure. Only one or two precautions are necessary to make them work well. Fluid excretions should, as far as possible, be kept apart from solid excreta, and the earth used should be well dried before use. Imperfectly burned wood ashes, mixed with ordinary loam dried, makes the best kind of earth to use. Sand does not suit well.

Ease in Clothing.—Clothes should be made large enough to let every movement be made with as much ease when they are on as when they are off. Their weight should be borne by the shoulders. In the dress of men this is fairly accomplished, but the dress of women drags from the waist, and occasions physical bondage, which places them at a great disadvantage as active workers.

Eat and Drink, What to, How Found Out.—See WHAT TO EAT AND DRINK, HOW FOUND OUT.

Eat, How Much to.—Much time and trouble have been expended by sanitarians in the effort to determine the proper amount and proportions of the various articles of food necessary to keep an average human being in health. The result of these observations, arranged into diet tables, are, very briefly, somewhat as follows:—A healthy, full-grown Englishman, doing a moderate amount of work, requires daily about four and one-half ounces of dry nitrogenous, three ounces of fatty, and fifteen ounces of sugary and starchy food, besides an ounce of saline matter. That is to say, in order to retain his full strength and weight, he must eat and *thoroughly digest*, every twenty-four hours, rather more than a pound of fresh meat and eggs, about two pounds each of bread, potatoes, or their equivalents in other starchy and saccharine foods, with nearly a quarter of a pound of butter, lard, and suet.

Under ordinary circumstances, the penalty for taking less than this amount of food is loss of flesh and strength, more or less rapid in proportion to the degree in which economy of nutriment, forced or otherwise, is practised. The penalty for eating more than these quantities is derangement of the stomach, liver, and intestines, by overloading them, and a consequent production of dyspepsia, biliousness, diarrhœa, or constipation, with their innumerable attendant evils, which, more, perhaps, than any other

class of influences, prevent the attainment of long life.

But the conditions under which we live are constantly varying, and of necessity the amount and character of our aliment must be altered to compensate, as far as possible, for these modified surroundings. This power, to adapt himself to circumstances, is one of the most important distinctions between civilized man and savages, or brute beasts, and is nowhere more distinctly exhibited than in regard to our food.

The amount of exercise taken, or labour performed, is one of the most important of these modifying conditions, an adult man in idleness needing about one-fourth less, and a farmer at hard labour requiring nearly one-fourth more, than the quantities mentioned. The influence of climate is also considerable, inhabitants of cold regions requiring more fatty nutriment, as do the Esquimaux, whilst those who reside in the torrid zone instinctively partake less freely of both fatty and nitrogenous articles of diet. As a rule, women need about nine-tenths of the nourishment requisite for men, boys of sixteen about the same as women, and children of ten years half the amount necessary for adults. Individual peculiarities, whether temporary or permanent, should be studied and conformed to with the utmost care.

Eating and Drinking, Excess in.—See EXCESS IN EATING AND DRINKING.

Eating, How Generally Treated.—"Speaking in general terms," says Sir Henry Thomson, "man seems, at the present time, prone to choose foods which are unnecessarily concentrated and too rich in nitrogenous or flesh-forming material, and to consume more in quantity than is necessary for the healthy performance of the animal functions. He is apt to leave out of sight the great difference, in relation to both quantity and quality of food, which different habits of life demand, e.g., between the habits of those who are chiefly sedentary and brain-workers, and of

those who are active and exercise muscle more than brain. He makes very small account of the different requirements by the child, the mature adult, and the declining or aged person. And he seems to be still less aware of the frequent existence of notable individual peculiarities in relation to the tolerance of certain aliments and drinks. As a rule, man has little knowledge of, or interest in, the processes by which food is prepared for the table, or the conditions necessary to the healthy digestion of it by himself. Until a tolerably high standard of civilization is reached, he cares more for quantity than quality, desires little variety, and regards as impertinent an innovation in the shape of a new aliment, expecting the same food at the same hour daily, his enjoyment of which apparently greatly depends on his ability to swallow the portion with extreme rapidity, that he may apply himself to some other and more important occupation without delay. Eating is treated, in fact, by multitudes much as they are disposed to treat religious duty—which eating assuredly is—that is, a duty which is generally irksome, but unfortunately necessary to be performed. As to any exercise of taste in the serving or in the combining of different foods at a meal, the subject is completely out of reach of the great majority of people, and is as little comprehended by them as the structure and harmonies of a symphony are by the first whistling boy one chances to meet in the street. The intelligent reader who has sufficient interest in this subject to have followed me thus far may fancy this a sketch from savage life. On the contrary, I can assure him that ignorance and indifference to the nature and object of food mark the condition of a large majority of the so-called educated people of this country. Men even boast of their ignorance of so trivial a subject, regard it as unworthy the exercise of their powers, and—small compliment to their wives and sisters—fit only for the occupation of women.”

Eau de Seltz.—See MINERAL WATERS, MANUFACTURE OF.

Eau Gazeuse.—See MINERAL WATERS, MANUFACTURE OF.

Echo.—The repetition of sound which we call “echo” is the throwing back of sound-waves to their source. When a stone is thrown into the middle of a still pond, the surface is immediately disturbed, and from the point at which it has been entered by the stone, a number of waves appear to emanate in circles, and, widening in extent as they proceed, at last appear to reach the bank. But when this stage has been reached, it is observed that some of the waves appear to go back towards the point of starting, thus representing echo.

Ectropium (*Gr.* *ek*, from; *tropé*, turning; from *trepó*, I turn).—A slight injury of the face below the eyes, or the simple contraction from some other cause of the skin of that part, may produce the deformity called *ectropium*, or eversion of the lower lid; and the opposite state of inversion (*entropium*, or *trichiasis*) may result from a similar contraction of the edge of the eyelid itself. Severe inflammation, and even blindness, may be the consequence of the latter affection from the friction of the lashes against the globe. Both of these deformities may be remedied by a slight operation.

Eczema (*Gr.* *ekzesis*, a boiling out; from *ek*, from; *zeo*, I boil).—Foremost among all skin diseases in importance, both from the numbers affected and the distress occasioned, must ever come this protean, multiform, or ever-varying eruption—eczema, called also salt-rheum or moist tetter. Attacking all classes and conditions, from the cradle to the grave, appearing about equally in both sexes, it forms about one-third of all cases of skin disease, as shown by statistics. But this by no means indicates the frequency of the disease, for multitudes have it who never seek its cure, so that it may safely be regarded as forming nearly one-half of all existing cases of skin disease. The name “eczema” is not, how-

ever, an indefinite one for skin disease, as many suppose, nor for a class of diseases, but represents a well-defined affection of the skin, quite distinct from all other diseases.

The forms under which eczema appears are so varied that it is difficult to give a brief definition of the disease, or a short description of its phases and conditions. It may be said, however, that eczema is an inflammatory, acute or chronic, affection of the skin, exhibiting varied appearances, according to the state of the eruption, its seat, and the condition of the patient. It is never a purely local disease, but always has some constitutional conditions on the back of it, foremost among which is debility. This debility may be general, or may affect single organs or systems, as the digestive, the nervous, etc., or even the skin itself, as when this organ has been enfeebled by one of the eruptive fevers, as scarlatina.

Eczema often appears to be contagious, as when a whole family is attacked, or when a nurse has it after attending a child affected. But in these cases it is generally found that either the same influences are at work, producing the disease in all, or that some other eruption has been mistaken for eczema. In infancy, eczema may begin at any time, from a few weeks upwards, and, when well developed, exhibits a raw, moist, red surface, which tends to cover itself with crusts, which are replaced as often as they are washed off. Its most common seat is on the face and scalp, also about the buttocks. Very frequently during hot weather infants at the breast will be subject to a very slight form of popular eczema, or *lichen*, in which there are scattered red points, slightly elevated, on the cheeks or on the arms and body, which do not give much annoyance. This is called popularly a "heat eruption," "red gown," or "red gum," or "strophulus." It is an innocent affection, which may be relieved with a little zinc ointment, half a drachm to an ounce of cold cream.

In children somewhat older—say from five to ten years of age—eczema is frequently seen as raw, moist, red patches

behind the ears, or in the bends of the elbows or knees, or sometimes as separate, smaller and more inflamed spots, covered with crusts, especially about the hands and face.

In older life, eczema is more apt to present varied appearances, which often render the diagnosis very difficult. No part of the body is exempt from liability to attack, and at times the entire surface may be affected at once. The characters of redness and itching are always present, together with a certain amount of thickening of the skin. Writers speak of a variety of forms, but the disease in its real essence is always one and the same.

Eczema, Causes of.—In regard to the causes of eczema, they are of two kinds: first, the local; and, second, the general, or predisposing causes. Anything which irritates or inflames the skin can excite eczema in one subject to it; thus, we see the eruption appearing again and again in many cases, as often as the local irritation is repeated. The list of exciting causes is, of course, as great as the number of articles or conditions which might irritate or inflame the skin.

Eczema, Diet in.—With reference to diet in eczema, or salt-rheum, the most common of all skin diseases, attention must first be directed to the errors which may be constantly observed in those suffering from it during infant life. In infants at the breast, too, frequent feeding, we believe, is a frequent cause of this and other diseases. Especially is it common for the mother to give the child the breast every time it cries, or is restless with the itching, and this generally but aggravates the already existing digestive disorder. The times of feeding should be regulated, and the breast not given oftener than every two hours, or longer. But, again, the times of feeding may be correct, and the error be in the quality of milk, from a faulty diet in the mother. It is very generally found that mothers with eczematous children at

the breast are in the habit of taking daily a larger or smaller quantity of ale, beer, porter, or wine, or else a large quantity of tea. Dyspepsia in the mother will very often cause eczema in her nursing child. Sometimes the milk is too poor, and the mother needs attention, and the mother and child may both require the addition of cod-liver oil.

When the child with eczema passes beyond the nourishment of the breast, great care is required that its diet be correct. It is hardly necessary to allude to the impropriety of giving young children "a little of all that's going," as is daily done among the poor, and sometimes even among the educated classes. Even children at the breast are often fed from the table with the food of adults; especially do they often get a little tea and coffee, of which children are universally fond. These should, of course, be interdicted, and they should be encouraged to take milk freely.

It is an error in the diet of these little patients with eczema to overload the stomach with pure starch compounds, as rice, farina, etc. It is better to give them such foods as thoroughly cooked wheat, oatmeal, etc. In some cases, however, oatmeal does not seem to be well borne by patients with skin diseases; there is some truth in the popular idea that "oatmeal is heating."

Most eczema patients, both children and adults, avoid or dislike fat; and this is an error which requires attention. Cod-liver oil is constantly given with the best effect in this disease, and other oily matter is quite as beneficial. Patients with eczema, and with many other skin diseases, should take a reasonable quantity of fat at all times, such as the fat of beef, mutton, etc., always, however, short of producing any derangement of the stomach, or biliousness. But the fat must not be taken in the way of fried things. In order to consume properly this extra quantity of fat, more exercise in the open air is necessary.

treatment of eczema is so varied, according to the patient, the location of the eruption, its stage, and condition, that no rules can possibly be given for its home management. Indeed, it should always be treated medicinally, and certainly never by quack medicines.

There are, however, certain elements which may with advantage be attended to by the patient, who can thus aid greatly in the treatment of the case. Diet and hygiene are all-important. Much difference in the progress of the case may be made by the manner in which the applications directed are used. As a rule, ointments act much better when spread on muslin or lint and laid on the part, than when spread on the diseased surface, however carefully that may be done. Most ointments should be used freely, spread on linen or lint as thick as the back of a table-knife, and then laid upon the part, and made to fit closely to it. Where the surface is at all curved or irregular in outline, it is far better to spread a number of strips and lay them on, partly overlapping each other. In treating the hand, it is very common for patients to rub on the ointment, and then draw on a glove. This is a poor way, indeed, as the glove generally takes off much of the ointment, and the results are by no means as good as when the above plan is followed.

Much may be accomplished, frequently, in the way of preventive measures in eczema. A large share of the eruption in this disease is due to the scratching which results from the intense itching peculiar to the disease. This itching will frequently be very troublesome before much or anything is seen on the surface. If, therefore, by the mental control of older persons, or by physical restraint of children, we can assist in preventing the development or increase of the disease, we can also help much in the medical treatment of the case. The irritating action of certain articles of clothing must ever be borne in mind. Thus, woollen clothing must never be allowed in contact with eczematous skin; and when flannels are

first put on in the autumn, they not unfrequently give rise to much irritation. The poisonous effects of certain dyes must not be forgotten, as cases are continually presenting themselves where coloured socks have been the starting-point of eczema. Instances are also on record where gloves, coloured shirts, etc., have caused artificial eruptions which may pass into eczema, and we have seen eruptions produced by black crape when it touched the skin; also from a hat lining.

Eels.—Eels are extremely objectionable, on account of the large proportion of oil which they contain. Cases of indigestion and alimentary disturbance are frequently to be traced to their use. When eaten, they should always be qualified with vinegar.

Effective Means of Ventilation.

—See VENTILATION, EFFECTIVE MEANS OF.

Effect of Exercise.—See EXERCISE, EFFECT OF.

Effervescing Drinks.—See TEMPERANCE DRINKS.

Egg Brandy.—Take the whites and yolks of three eggs, and beat them up in five ounces of plain water. Add three ounces of brandy slowly, also add a little sugar and nutmeg. Two tablespoonfuls of this may be given at a time. This is a very useful way of administering brandy in cases of prostration, as in typhus and other low fevers. Another good preparation is made by taking the white of a new-laid egg, and stirring it up with a tablespoonful of cream, and adding to the mixture a tablespoonful of brandy, in which a lump of sugar has been dissolved.

Egg Emulsion.—See EMULSIONS.

Eggs of Birds.—These are very nutritious articles of food; they contain as much oil and flesh-forming matter as butchers' meat. They enter into the composition of

puddings, cakes, buns, and other forms of diet. They are also eaten alone, boiled or fried, and are most digestible when least done. The egg of the domestic fowl is usually eaten, but those of other birds are frequently used. All birds' eggs may be eaten with impunity. The average weight of a hen's egg, shell and all, is about two ounces. The following is the composition of 100 parts of the white and yolk of hens' eggs:—

WHITE.

Water	85.0
Albumen	12.0
Extractive matter. . . .	2.7
Salts	0.3
	<hr/>
	100.0

YOLK.

Water	53.28
Albumen	17.47
Oil or fat	28.75
Salts	0.50
	<hr/>
	100.00

One advantage possessed by eggs is that we are certain on the point of cleanliness when they are placed on the table in the shell.

The eggs of all granivorous birds, and especially of the domestic fowl, yield a mild, demulcent, and strengthening aliment, well suited to consumptive and delicate persons, and such as are exhausted by immoderate evacuation. When lightly boiled, they are very easily digested; but when boiled hard, or fried, they sit heavily on the stomach, and are unwholesome. Raw eggs are gently laxative, and are found to be serviceable in cases of jaundice and obstruction in the digestive organs.

Eggs in Sick-Room.—Eggs are found most useful and nutritious as articles of diet in the sick-room. They are used for mixing with castor oil, turpentine, and other strong medicines, to render them more palatable; also for making mulled

brandy and wine. A most nutritious and agreeable drink may be made for invalids, consisting of sherry or brandy beaten up with raw eggs and sweetened with sugar. Eggs may also be given mixed with Liebig's extract of meat.

Eggs, Test for.—Good eggs may be recognised by putting them in a strong brine made with one ounce of common table salt to ten ounces of water. In this a sound egg sinks to the bottom, whilst the stale ones will float at the top.

Elasticity of Hair.—See HAIR, STRENGTH OF.

previous to retiring to bed on a winter night, is a thing to be "run for," as Cobbett would say; it is not, however, agreeable to every taste.

Elderly Persons, Baths for.—
See BATHS FOR CHILDREN.

Electuaries (*Low Lat.* electuarium; from *Gr.* *ek*, from; *lecho*, I lick).—The name electuary is changed now to that of confection. These preparations are of long standing. They consist of mixtures of vegetable substances and light earthy powders, which are more agreeable given in this form than in mixtures, and are made



Swan's Egg.

Turkey's Egg.

Duck's Egg.

Plover's Egg.

COMPARATIVE SIZES OF EGGS.

Elderberry Wine.—The elderberry is well adapted for the production of wine; its juice contains a considerable portion of the principle necessary for a vigorous fermentation, and its beautiful colour commu-



ELDERBERRIES.

nicates a rich tint to the wine made from it. It is, however, deficient in sweetness, and therefore demands an addition of sugar. It is one of the very best of the genuine old English wines; and a cup of it mulled, just

into masses by means of honey, syrup, mucilage, etc.

Confection of Senna.—This preparation consists of senna, coriander, tamarinds, figs, prunes, cassia pulp, extract of liquorice, sugar, and distilled water. It may be given in doses varying from a teaspoonful to a tablespoonful. It acts as a somewhat stimulating purgative, operating chiefly upon the small intestine. It is useful in constipation. When given alone, senna is apt to produce a good deal of griping, but when mixed with carminatives, as in this case, the griping is removed. It must not be given in cases of threatened miscarriage or in menorrhagia.

Confection of Sulphur.—Take of sublimated sulphur, two ounces; cream of tar-

tar, half an ounce; syrup of orange peel, two ounces; from a teaspoonful to a dessert-spoonful may be taken every morning. It has a gentle laxative effect upon the bowels, and rarely fails to give relief in cases of piles.

Elements of Food.—See FOOD, ELEMENTS OF.

Elements of Human Body.—

The human body is composed of the same elements as are found entering into the composition of the mineral substances found on the earth's surface. The following is a list of the quantities of the various elements found in a human body weighing eleven stone, or one hundred and fifty-four pounds:—

	lbs.	oz.	grs.
Oxygen	111	0	0
Hydrogen . . .	15	0	0
Carbon	20	0	0
Nitrogen	3	9	0
Phosphorus . . .	1	12	190
Sulphur	0	2	217
Calcium	2	0	0
Fluorine	0	2	0
Chlorine	0	2	382
Sodium	0	2	116
Iron	0	0	100
Potassium . . .	0	0	290
Magnesium . . .	0	0	12
Silicon	0	0	2
Total	154	0	0

It will be seen that the first four elements are oxygen, carbon, hydrogen, and nitrogen. These are non-metallic elements, and enter largely into the composition of all organic beings. No organic being can be developed without these four elements; hence they have been called organic elements. The next elements of importance are undoubtedly, phosphorus and sulphur. Chlorine, fluorine, and silicon are non-metallic elements. The rest are metals. Of these, sodium is most abundant, and iron and silicon are least so. Nevertheless, they are

necessary. Even the absence of the small quantity of silicon is accompanied by diseased conditions. Thus the enamel of the teeth in a healthy condition contains silicon; but if this is absent, the enamel is not properly formed, and the teeth quickly wear away and become comparatively useless. The elements, however, are not found in the body in their pure state, but are mixed together, forming the following compounds:—

	lbs.	oz.	grs.
Water	111	0	0
Gelatine	15	0	0
Fat	12	0	0
Albumen	4	3	0
Fibrin	4	4	0
Phosphate of Lime	5	13	0
Carbonate of Lime	1	0	0
Fluoride of Calcium	0	3	0
Chloride of Sodium	0	3	376
Chloride of Potassium	0	0	10
Sulphate of Soda .	0	1	170
Carbonate of Soda	0	1	72
Phosphate of Soda	0	0	400
Sulphate of Potash	0	0	400
Peroxide of Iron .	0	0	150
Phosphate of Potash	0	0	100
Phosphate of Magnesia	0	0	75
Silica	0	0	3
Total	154	0	0

The above are the principal permanent compounds found in a human body. *Water* is composed of oxygen and hydrogen, and constitutes four parts of the bulk, and sometimes even more of the whole organic kingdom. *Gelatine* is composed of the four inorganic elements, and is found in the cell walls of the animal tissues. It is especially abundant in the bone cells and in the skin. *Fat* is a compound of carbon, hydrogen, and oxygen. It is distributed over the body in the adipose tissue, and is also found in the marrow of the bones, in the joints and other parts. *Albumen* contains the four organic elements. It is found in the blood, and is the principal substance entering into the composition of the nerves. *Fibrin*

differs but very slightly from albumen. It is not found dissolving in the blood like that substance, but is suspended in it, and coagulates when the blood is allowed to stand. It enters into the composition of the muscular tissue. *Phosphate of lime* is found in the bones. A half part by weight of the human skeleton is composed of phosphate of lime. *Carbonate of lime* is found also in the bones, in the proportion of about 10 per cent. *Fluoride of calcium* is also found in bones of human beings. It is often found in large quantities in fossil bones, and the quantity of fluoride is said to be a guide to the age of the bones in which it is found. *Chloride of sodium* is found in the blood. It is necessary to the life of human beings as well as all other animals. Its use is universal amongst mankind, and they suffer from disease when deprived of it. *Carbonate, sulphate, and phosphate of soda* are other forms of sodium which are found in the blood and tissues of the human body. *Chloride of potassium*, and the same salts as of sodium, are also found in the body, but they are not so abundant as the latter. A still smaller quantity of *magnesia* than of the alkaline metals is constantly found as a constituent of the human body.

Elixir Vitæ, The True (*Fr. elixir*; from *Arabic* al iksir, the philosopher's stone; *Lat. vita*, life).—It has been well said by Hufeland that "joy is one of the greatest panaceas of life. No joy is more healthful or better calculated to prolong life than that which is to be found in domestic happiness, in the company of cheerful and good men, and in contemplating with delight the beauties of nature. A day spent in the country, under a serene sky, amidst a circle of agreeable friends, is certainly a more positive means of prolonging life than all the vital elixirs in the world. Laughter, that external expression of joy, must not here be omitted. It is the most salutary of all the bodily movements; for it agitates both the body and the soul at the same time, promotes digestion, circula-

tion, and perspiration, and enlivens the vital power in every organ."

Embrocations and Liniments (*Low Lat. embroco*, I use lotion; from *Gr. em'broche*, lotion; from *em*, into; *brech'o*, I wet. *Lat. linimentum*, from *lino*, I besmear).—These preparations have the consistence of oil. They are more active than ointments, and act as local stimulants, relieving deep-seated pain and inflammation.

Chilblain Liniment.—Take an ounce of camphorated spirits of wine; half an ounce of solution of subacetate of lead, or Goulard's extract. Mix; and apply three or four times a day.

Embrocation for Sprains and Bruises.—Take half an ounce of laudanum and mix it with an ounce and a half of compound liniment of camphor. When the more active symptoms have passed away, this forms a useful application for relieving pain. It is also useful in pains of a rheumatic character.

Liniment for Bruises when there is Inflammation.—Take of solution of acetate of ammonia and soap liniment of each an ounce; mix. May be applied frequently when the bruised part is inflamed.

Liniment for Rheumatism.—Take half an ounce of belladonna liniment and an ounce and a half of liniment of opium; mix. This is a soothing application in sprains and affections of a rheumatic or neuralgic nature.

Liniment for Whooping Cough.—Take of belladonna liniment two drachms; soap liniment, or opodeldoc, one ounce and six drachms; mix. May be rubbed, night and morning, into the spine of a child five years old suffering from whooping cough.

Roche's Embrocation.—Take of olive-oil four ounces, oil of amber two ounces, oil of cloves sufficient to scent it strongly; mix. When rubbed on the chest, it acts as a gentle stimulant to the skin, and may be rubbed over the spine in cases of whooping cough.

Stimulating Liniment.—Take of com-

pound liniment of camphor and soap liniment, or opodeldoc, of each an ounce; mix. This is a useful outward application in cases of ordinary sore throat. A piece of flannel warmed at the fire should be put on after the rubbing is completed.

Strong Stimulating Liniment.—Take of strong liniment of ammonia an ounce and a half, oil of turpentine half an ounce; mix. This is an excellent rubefacient liniment, and is useful in chronic rheumatic affections.

Emergency, Cases of, Brief Rules for.—See CASES OF EMERGENCY, BRIEF RULES FOR.

Emetic Mixture.—See MIXTURES.

Emetics (*Gr.* *emetikos*, that which causes vomiting; from *emeo*, I vomit).—Emetics are medicines or other agents which produce vomiting; the simplest, and, in many cases, the most effectual, being a tickling of the back of the throat, especially at the part called the soft palate, with a feather. In medicine several classes of emetics are used; some cause sickness and faintness; some by irritating the stomach cause it to get rid of its contents without any great degree of faintness, such as accompanies the other. Vomiting itself is a complex act, partly the result of the powerful muscles constituting the walls of the belly, partly the result of contraction of the muscular walls of the stomach itself; that is to say, of the cavity into which the food is received. Of ordinary emetics, ipecacuanha is that most frequently employed; antimony is also used in the form of antimonial wine or tartar emetic, the latter in small doses. These remedies cause much sickness and prostration, and consequently are used chiefly in cases where it is desirable that such a condition should be induced for the arrest or suppression of certain diseases. Thus, in the case of children attacked with croup, an emetic of this class is of the greatest possible value, especially if accompanied with a warm bath and fos-

tered with lukewarm drinks. Then, again, it must never be forgotten that little children, especially infants, if attacked with cold, cough, and thereby expel from their lungs the matter which has collected there; but this in all probability only reaches the air tubes, and gets no farther. They cannot expectorate, and so the tendency is to accumulate phlegm in the chest, whence the rattling noises heard when they have colds. Now, it is of vital importance to get rid of this substance, and of all remedies an emetic is the most efficient. Ipecacuanha wine had best be used, and that may be given in repeated teaspoonful doses until the child is sick and the whole is brought up. This may seem harsh practice, but in the end it is safest. In poisoning, by whatever agent, it is of vital importance to get it expelled from the stomach, and for this purpose common salt, mustard, or smelling salts may be given in the respective doses of a handful of salt, a tablespoonful of mustard, or a teaspoonful of smelling salts, all freely diluted with water, and to be followed up by copious draughts of lukewarm water. These are especially useful in poisoning with opium or other narcotic agent. For this purpose, too, sulphate of zinc (white vitriol) and sulphate of copper (blue vitriol) are particularly well adapted, but, as a rule, less readily attainable. Sulphate of zinc is a very safe emetic, emptying the stomach without giving rise to much nausea. Perhaps the best is a combination of this with ipecacuanha—15 grains of sulphate of zinc and 5 of ipecacuanha, given, as usual, with much lukewarm water. There are many cases in which an individual has partaken of indigestible or unsuitable food, that an emetic, by getting rid of it, does great good; as during the process of vomiting, the liver and gall-bladder are compressed, and bile finds its way back into the stomach, thence to be expelled by the mouth. An emetic is often one of the very best plans for getting rid of an accumulation of bile in the liver or its appendages. The process of vomiting commonly also causes a certain amount of perspiration.

An Emetic.—Take a teaspoonful of the finest mustard, mix it in a tumblerful of warm water, and administer to the patient. This is a safe emetic, and should be at once administered when any poisonous substance has been swallowed.

Another Emetic.—A teaspoonful of ipecacuanha wine, to be repeated in ten minutes if required. This is a favourite remedy in cases of croup. It is also given to children in cases of bronchitis when there is difficulty of expectoration.

Another Emetic.—Twenty grains of sulphate of zinc, followed by copious draughts of tepid water. This emetic is of a stimulating character; it is prompt in its action, and safe. It is very useful in cases of narcotic poisoning, as when an overdose of laudanum has been taken. It causes little after-depression.

Emotion a Check on Secretion of Saliva.—*See* SALIVA, SECRETION OF, CHECKED BY EMOTION.

Emotions and Passions, Influence of.—*See* PASSIONS AND EMOTIONS, INFLUENCE OF.

Emulsions (*Lat.* *emulsum*, to milk out; from *emulgeo*, I milk from).—Emulsions are mixtures of bland mucilaginous substances with water, and are used to allay irritation in the lungs, alimentary canal, and other parts, and likewise as vehicles for certain substances which could not otherwise be so conveniently taken in a liquid form.

Cough Emulsion.—Take of gum ammoniac two drachms; water, half a pint. Rub the ammoniac well, gradually adding the water, until they are thoroughly mixed, and then strain through linen. This emulsion forms a useful expectorant in old coughs and asthmas when no inflammatory symptoms are present. The dose is from one to two tablespoonfuls, united with an equal quantity of almond emulsion.

Egg Emulsion.—Rub the yolk of two eggs and a little sugar with a pint of cold

water, adding to it afterwards a glass of Rhenish or other light foreign wine, and a little lemon juice to give it a flavour. This forms a very nourishing restorative drink of great benefit in cases of debility, and when a patient is recovering from an attack of some severe disease where mild stimulation is required. Without the wine the emulsion is a good remedy in cough, hoarseness, spitting of blood, and constipation.

Emulsion of Gum Arabic.—Take of gum arabic in powder, two drachms; sweet almonds, blanched, white sugar, of each half an ounce; barley water, warm, a pint; dissolve the gum in the warm barley water, and when it is almost cold, pour it gradually upon the almonds, previously beaten to powder with the sugar, rubbing them at the same time, so as to form a milky mixture; then strain. This is a useful demulcent in common colds, and strangury and general irritation about the urinary organs, and as a pleasant vehicle for the exhibition of more active remedies in those and other complaints.

Enamel (*Lat.* *en*, in or on; *Fr.* *esmail*; *Ger.* *Schmelz*, from *schmelzen*, to melt).—The enamel is the cap or covering of the crown of the tooth. It is the hardest tissue of the body. It is thickest on the cutting edges and masticating surfaces, gradually becoming thinner towards the neck, at which point it is met or slightly over-lapped by the cementum. The enamel is possessed of very slight, if of any, sensibility. It contains not more than four per cent. of animal matter, and is almost entirely soluble in acids. Under the microscope it is found to consist of parallel fibres or rods lying side by side—generally hexagonal, but some nearly circular and others nearly square.

Endemic.—*See* INFLUENZA.

End of Life.—Natural death is the gradual wearing out of the machine of life. That which is the result of sickness, violence, or accident, is unnatural.

“The modes in which death is brought

about appear, at first sight," says Professor Huxley, "to be extremely varied. We speak of natural death by old age, or by some of the endless forms of disease: of violent death by starvation, or by the innumerable varieties of injury, or poison. But, in reality, the immediate cause of death is always the stoppage of the functions of one of three organs—the cerebro-spinal nervous centre, the lungs, or the heart. Thus a man may be instantly killed by such an injury to a part of the brain, which is called the *medulla oblongata*, as may be produced by hanging or breaking the neck.

"Or death may be the immediate result of suffocation by strangulation, smothering, or drowning, or, in other words, of stoppage of the respiratory functions.

"Or, finally, death ensues at once when the heart ceases to propel blood. These three organs—the brain, the lungs, and the heart—have been fancifully termed the *tripod of life*.

"In ultimate analysis, however, life has but two legs to stand upon—the lungs and the heart; for death through the brain is always the effect of the secondary action of the injury to that organ upon the lungs or the heart. The functions of the brain cease when either respiration or circulation are at an end. But if circulation and respiration are kept up artificially, the brain may be removed without causing death. On the other hand, if the blood be not aerated, its circulation by the heart cannot preserve life; and if the circulation be at an end, mere aëration of the blood in the lungs is equally ineffectual for the prevention of death."

With the cessation of life, the every-day forces of the inorganic world no longer remain the servants of the bodily frame, as they were during life, but become its masters. Oxygen, the servant of the living organisms, becomes the lord of the dead body. Atom by atom the complex molecules of the tissues are taken to pieces, and reduced to simpler and more oxydated substances, until the soft parts are dissipated chiefly in the form of carbonic acid, ammonia, water, and soluble salts, and the

bones and teeth alone remain. But not even these dense and earthy structures are competent to offer a permanent resistance to water and air. Sooner or later the animal basis which holds together the earthy salts decomposes and dissolves; the solid structures become friable, and break down into powder. Finally, they dissolve, and are diffused among the waters of the surface of the globe, just as the gaseous products of decomposition are dissipated through the atmosphere.

Enemas (*Gr.* *enemi*, I throw in; from *en*, in; *emi*, I throw).—When food or medicine is introduced in a fluid form into the lower bowel, it is termed an enema; formerly a clyster. It may be employed with advantage in cases of prolonged constipation, when it is better and easier to act upon the hardened mass from below than from above. Many substances may be employed, but there is none better than plain soap and water. If that do not succeed, half an ounce of castor oil and half an ounce of turpentine may be beaten up with an egg, and a pint of hot water added. In making use of enemata for this purpose, not less than a pint should be used; for the normal stimulus to the bowel to act is distension. If, on the other hand, it is desired that the enema should be retained instead of being expelled, the smaller the quantity used the better. This is the case when from disease of the stomach it is impossible or unadvisable to give food that way, and small quantities of beef-tea, etc., may be thrown up the bowel. Then not more than a couple of ounces should be used at a time. This too is the case when opium enemata are prescribed as they sometimes are for disease of the lower bowel or neighbourhood.

Enemata are given either to relieve or control the bowels, or for the purpose of nourishing a patient not able to take food by the mouth.

For the first purpose, from one to two pints of liquid may be used; warm soap-suds, with castor oil or sweet oil, in such proportions as the doctor may order; or, where

diarrhœa is to be controlled, less fluid; probably thin starch mixed with cold water, and some astringent or opiate, as thirty drops of laudanum; in all cases the doctor's directions must be asked and followed.

For nourishment, various things may be given: beef-tea, milk and brandy, strong soups, beef-juice and brandy, etc., as is prescribed; but for nourishing enemata not more than four to eight ounces should be given. More than this may simply irritate and not be retained. The fluid must be retained as long as possible, and no effort made to discharge it.

Oil Enema.—Either sweet or castor oil given clear, six to eight ounces.

Salt Enema.—Give one and one-half ounce salt in one pint of gruel, warmed.

English Generation, March of, Through Life.—See MARCH OF ENGLISH GENERATION THROUGH LIFE.

Enlarged Tonsils.—See TONSILS, ENLARGED.

Enteric Fever.—See TYPHOID OR ENTERIC FEVER.

Entropium.—See ECTROPIUM.

Ephemeral Fever.—See FEVER, CHARACTERISTICS OF.

Epidemic.—See INFLUENZA.

Epidermis (*Gr.* *epi*, upon; *derma*, skin).—The outer layer of the skin, the *epidermis*, cuticle, or scarf skin, is not composed at all of fibres, but, on the contrary, of separate roundish elements called cells. These of course cannot interlace as do the fibres of the corium, but are piled upon each other in layers to a varying extent in different parts of the body. Thus, upon the soles of the feet the epidermis may attain great thickness; also upon the palms, or wherever friction calls for more protection of the soft parts underneath; whereas on the face this layer is very thin.

The epidermis, outer, or scarf skin, is also

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divided into two portions—the outer, in which the scales are all flat, hard, horny, and lifeless, only waiting to be thrown off or removed by friction; and a deeper portion, in which the cells are round or many-sided, are soft and moist, are, in fact, growing and developing to replace those removed externally.—See RETE MUCOSUM.

Epidermis, the Seat of Eruptions.—See ERUPTIONS, LOCALITY OF.

Epiglottis (*Gr.* *epi*, upon; *glottis*, mouth of windpipe).—If the tongue is pulled forcibly forward, a little curved projection is sometimes seen behind it, at its deepest part. This, the *epiglottis*, is a valve of gristle, by which the air passage is covered over during the movement of swallowing, to prevent the food or drink going down the wrong way—i.e., into the larynx instead of the gullet. It participates in the movements of the tongue, to the base of which it is attached by a strong ligament. It is also attached by ligaments to the sides of the throat; and when these ligaments are very tense, their edges present to the finger the sensation of a thin and firm foreign body, such as a pin or fish-bone, and are even liable to be mistaken for the intruder in cases in which such foreign bodies have been swallowed, and be thus ruthlessly pulled by those who are not aware of this circumstance. Its special use seems to be to cover the glottis (an aperture in the larynx or the apparatus of voice, situated at the top of the trachea or windpipe), and thus prevent the passage of food into the air tubes.

Epilepsy (*Gr.* *epilepsia*; from *epi*, upon; *lambano*, I take or seize).—This disease, sometimes called “falling fits,” consists of paroxysms of convulsion, returning at uncertain periods, accompanied by an abolition of sense and voluntary motion, and ending in somnolency or complete sleep.

It frequently occurs in infancy and early childhood; and when the patient survives the first attack, it sometimes becomes

habitual or constitutional through even a long life. The peculiarities of an epileptic fit are strong, general convulsions, coming on suddenly, sometimes with a violent scream, always with immediate loss of consciousness; sometimes, however, preceded by a momentary warning of either giddiness, local pain, or slight partial convulsions. The patient usually foams at the mouth, and the froth is often bloody from the accidental biting of the tongue or lips during the convulsive closing of the teeth. The eyeballs protrude, and are frightfully distorted; the whole countenance is generally turgid and livid. The convulsions and distortions, after a longer or shorter period, subside, consciousness slowly returns, and a state of drowsiness, stupor, and sometimes of sound sleep, succeeds, lasting, in a greater or less degree, for many hours.

The epileptic fit may, however, be of every degree of violence, from a momentary loss of consciousness, and the slightest possible convulsions, and with so sudden a recovery that the patient himself is scarcely conscious of its occurrence, to that appalling degree of universal spasm and distortion, and temporary annihilation of intellect, which seems to threaten instant destruction; and one such paroxysm may last for hours, or one of much shorter duration may be quickly succeeded by others for many hours together.

"On the eve of a fit," remarks Dr. Radcliffe, "confirmed epileptics are noticed to sit or move about in a moping and listless manner; to complain of chills and shiverings, or of faintness and sickness. The respiration is interrupted by frequent sighs; the pulse is weak, irregular, and slow. Occasionally there are headaches, dazzling of the eyes, singing in the ears, and other excitements of sensation; slight flushing of the face, dilatation of the pupils, and extreme irritability of temper. In some rare instances there is, immediately before, or at the commencement of the attack, a phenomenon of a more specific nature."

Dr. Beddoes was acquainted with a gentleman who, before an attack of epilepsy, mis-

placed his words in a curious way. He was always making blunders of the sort in his letters, and when talking he used to substitute one word for another, bearing, however, some resemblance in sense as well as in sound. For instance, he would say, "Everybody feels very languid this *wet* weather—I mean this *hot* weather;" or, "Come, who will sit down to supper? Here is only cold meat and *pudding*—I mean *pie*."

Epilepsy, Causes of.—The most frequent causes are irritation in the stomach and intestines; a diseased state of the spinal marrow; sudden fright; excessive grief; great loss of blood; the suppression of accustomed discharges, or of cutaneous eruptions; the action of mineral poisons; excess in drinking; and the imprudent use of calomel.

Epilepsy, Diet in.—The diet of an epileptic patient should be plain, light, and nutritious; meat in moderation once a day, but not savoury or high seasoned, milk, or milk porridge night and morning; no beer, wine, or spirits.

Epilepsy, Treatment of.—When an attack comes on, put the patient in the middle of a bed, so that he may be less liable to roll off; or, if he cannot be moved, let him lie on the floor; raise the head; unfasten all the clothing; put a handkerchief, made into a small, tight roll, between the teeth, to prevent the tongue from being bitten; put cloths dipped in cold water on the head and forehead, and hot-water bottles at the feet, if they are cold. Keep the room darkened and quiet. After the first few attacks, for which you have called a physician, you will understand what to do in the repeated seizures.

Children or grown persons liable to the disease should live simply; avoid all heating exercise, or going up and down stairs, or doing anything that may create dizziness. They should spend as much time as possible in the open air, and as little as possible over books and business; take a daily cold

sponge-bath, with brisk rubbing afterwards; eat easily digested and nourishing food slowly, and avoid bodily and mental fatigue. A great deal of moderate exercise in the open air, with moderately warm clothing, is desirable; heated and crowded rooms are to be avoided. The patient should sleep in an airy room, with his head and shoulders elevated, and without a night-cap; and he should daily souse or well wash his head with cold water in the summer, and with tepid water in the winter, taking care to rub it thoroughly dry with a coarse towel; and he should wear a light cap or hat. He ought also to pay as much attention to the keeping of his feet warm, both by day and night, as to keeping of his head cool.

Epilepsy, Graham on.—Dr. Graham, in his ever-useful "*Domestic Medicine*," a work which may always be referred to with safety and profit, after making some remarks on the treatment of epilepsy, and giving a brief account of the best remedies for this ailment in use among physicians, continues:—"There is one remedy still unnoticed here, and which, notwithstanding it is not in use among professional men, it would, with my views and feelings, be very reprehensible in me to pass by unheeded and unenforced. Whilst this disease has in all ages been regarded as one of the most afflictive of human maladies, it has likewise been acknowledged to be one of the most intractable under the hands of the physician. How often is it that he here employs one remedy after another, and urges one plan after another through a long succession of months and years, and all in vain! Then, why should not a direct special appeal be made under such painful and peculiar circumstances to Him who is the great First Cause of all good, the Centre and Source of all power and blessedness? When all secondary agents fail us, can it be either unreasonable, or unseemly to go straight to the first Cause of all things? Indeed, is not this the proper course pointed out to us by God Himself in His Word, suggested by many remarkable facts and deliverances met

with in the history of mankind, and enforced by our Saviour's express declaration, 'This kind goeth not out but by prayer and fasting'? (Matt xvii. 21.) The physical condition of the persons, in reference to whose care the Redeemer uttered these memorable words, appears to have been very similar to, if not exactly the same with, that of epileptics; for it is said in the 15th verse of the same chapter, 'My son is sore vexed; for ofttimes he falleth into the fire, and oft into the water,' which is precisely the case with those afflicted with epilepsy, and with no other diseased persons. If I did not give full credit to the value of medical science, I should not have appeared as the author of medical books; but I am, nevertheless, assured, that it is the will of Him from Whom cometh every good and perfect gift, that, in certain cases, the cure of even bodily diseases should be sought by extraordinary means; sufficient intimation being very frequently given by Him, that there are instances (and those not few) in which we must entirely leave the creature for the Creator, and depend absolutely on the arm of His omnipotence. Probably some persons will look on this as 'too hard' a saying, and will not receive it; but if so, while it is a subject of regret to me, I cannot do otherwise than remark, this is no more than what the world is daily witness to in respect to matters of far superior moment, and their unbelief cannot make either the faithfulness of God, or the faith of those who believe in Him, of no effect. Let it be ever remembered, that commonly, in this way at least, those only witness great deliverances who make great ventures, and are humbly bold in laying hold of superior strength, and there is as little reason as religion in man's putting his ability on a parallel with God's; in his prescribing one way when God requires another; or in his wilfully shutting his eyes against the express declarations and promises of Infallible Truth. I would, therefore, urge those afflicted epileptics, who have tried medicine without avail, to attend to the directions of the Apostle (Jas. v. 14, 15), 'Is any sick

among you? let him call for the elders of the Church; and let them pray over him, anointing him with oil in the name of the Lord: and the prayer of faith shall save the sick, and the Lord shall raise him up.'

"And in order to encourage such in this matter, I will take the liberty of referring to an instance or two of success. It should, however, be particularly noticed, that ordinary prayer, or reading of prayers, is not likely to gain the desired object; unhappily, the prayer of the generality do not reach half-way to heaven, as is evidenced by their languor, and lacking fervency, self-abasement, and importunity; but those who mightily wrestle with God, as Jacob did (Gen. xxxii. 26; Hos. xii. 4; Jonah iii. 8; see also Acts xii. 5, marginal reading), are likely to prevail, for such prayer 'moves the Hand that moves the world.'"

Epiphyses, Separation of.—See DISLOCATION, APPARENT.

Epsom Salts.—See MEDICINES, HOME.

Erectores Pilorum.—See MUSCLES OF SKIN, ACTION OF, ON HAIR.

Erect Position of Man.—See SKELETON, ERECTNESS OF.

Eruptions, Locality of (*Lat. erup'tio*, a breaking forth; from *erup'tus*; from *e*, from; *rum'po*, I break).—The locality of all eruptions is on the true skin, immediately under that epidermis which forms the covering of many eruptions on the skin, as in the water-blisters of "cold sores," "shingles," and "chicken-pox." It is also raised in little vesicles, or water-blisters, in eczema; and later in this disease the epidermis is largely removed, and we have a surface which is raw and bleeding, but one which, however sore, always heals without a scar, because only the epidermal layer is destroyed.

Erysipelas (*Gr. eruthros*, red; *pella*, skin).—Under the name of this disease,

which is also known as "St. Anthony's Fire," may be classed several varieties of eruption commonly known under this term, though distinguished, and very properly so in systematic works. They are often placed among skin diseases, but are too clearly attacks of a constitutional nature to be omitted from the class of fevers—though one of their essential characteristics is an inflammation of the skin.

Erysipelas, Symptoms of.—Erysipelas is always, unless in very slight cases, ushered in by one or two days of mild fever and disordered stomach; and some persons are so much more subject to the complaint than others, that they seldom pass through a spring and summer without a spontaneous attack. In many persons, too, the disposition is so strong that the bite or sting of insects (and more particularly the bite of leeches) is uniformly followed by erysipelas in the part, extending sometimes over the whole face or over a limb, running its usual course of many days. In the milder form, the eruption consists of one or more red patches, sometimes oval or circular, sometimes irregular in their circumference, frequently smooth throughout, at other times with a hard, elevated border, or with a rough and papulated surface. These patches appear indiscriminately on the face, trunk, or extremities; the oval patches, with hard elevated border, being most frequent on the front of the legs. The duration of the redness and swelling is from two or three days to many weeks, when both gradually subside, and a slight desquamation of the cuticle follows. Erysipelas in a severer form is marked with more general constitutional disturbance; the sensation of burning heat in the part is more intense; there is considerable tumefaction; and, when the face is the part attacked (which is the most usual seat of these severe cases), the eyelids are so swollen as to be entirely closed. The eruption usually appears at the end of the second day of the fever, and, in two or three more days, there are numerous small, or a few large, blebs

or blisters on the inflamed surface, which burst and desiccate on the second or third day after their appearance. In another variety the surface is perceived to be slightly rough on the first or second day, and, instead of vesicles or blebs, numerous small pustules cover it on the third or fourth day, which discharge a thin acrid matter, forming a yellowish scab or crust, which does not fall off in less than ten days or a fortnight.

Erysipelas, Treatment of.—The treatment is an aperient, as magnesia and Epsom salts, once a day; a mild, cooling diet; rest when the patches are on the legs, and a weak lotion of goulard applied frequently to the part, cold in summer, but warm in the winter season; or, what is a better criterion, of that degree of temperature which is most agreeable to the feelings of the patient.

The treatment in the severer forms of the disease must vary according to the intensity of the constitutional symptoms; but it is as well to say, that when the face or scalp is pretty extensively inflamed, very formidable, alarming, and even dangerous symptoms sometimes arise, such as delirium, with a rapid pulse and high fever: and all such cases require, of course, the aid of the most skilful practitioner.

Erysipelas is contagious, and its spread must be guarded against by ventilation and strict cleanliness.

Erysipelas, Domestic Management of.—"In the domestic management of St. Anthony's fire," says Sir Erasmus Wilson, "every disturbing cause, such as noise, conversation, bad news, heated temperature, cramming with nice broths and jellies, should be avoided, and the injunctions of the medical man should be carefully followed. The disease is always serious, and its consequences doubtful; it is often dangerous, often attended with delirium, and by no means a case to try Mrs. A's or good Mrs. B's advice upon; in other words, it must not be tampered with. Officious

kindness in the sick room is highly dangerous; deeds are wanted there, not words. The real wants of the patient should be anticipated, but no imaginary want created. The inflamed part should always be raised into an easy position, and one which will facilitate the current of the blood to the heart, and the prescription of the medical man carefully followed. Sometimes he may prescribe a cold lotion, in which case a layer of thinnest linen wetted in the lotion, but not so much as to drip and make the bed wet and uncomfortable, should be gently laid upon the part, and replaced by a second as soon as the first loses its moisture. Three of these pieces of linen should be in use at the same time—one on, one in the basin containing the lotion, and the third hanging on a string to cool, previously to taking the place of the second. No other covering should be placed upon this, as the object is to encourage evaporation as much as possible."

Erysipelas, Surgical.—In the great majority of cases of erysipelas, and especially of the more severe forms, the disease has its starting-point in a wound, open sore, or large ulcer on the surface of the body.

Erysipelas, Surgical, Symptoms of.—Given a recent contused or lacerated wound on the scalp or the skin of the leg, in a badly nourished and debilitated individual, living under faulty hygienic conditions, erysipelas will probably show itself under one of the two following forms:—Simple or cutaneous erysipelas, resembling in all respects the affection which frequently attacks the face in the absence of any wound or local irritation. In some cases of contused wound of the scalp, the redness, swelling, and blistering of the skin of the face are associated with much pain and tenderness over the whole of the head, and a hard, brawny condition of the scalp. The patient, after an attack of intense shivering, becomes very hot and feverish, and often loses his senses and raves violently. The tongue becomes brown, and the pulse very rapid.

In the course of thirty-six or forty-eight hours the condition of the scalp undergoes a change; it is no longer hard and tense, but now very puffy, and raised from the surface of the skull by a collection of fluid which subsequently, if not let out by the surgeon, breaks through at one or more points, and shows itself as thick yellow pus or matter. Occasionally, considerable portions of skin are destroyed, and bone is very often laid bare. If the patient should survive the acute stage of this dangerous affection, the erysipelatous redness and swelling disappear, the fever and delirium subside, and the sloughing wounds on the head are replaced by ruddy ulcers, which heal rapidly as the general health improves. In many cases, however, death occurs.

Erysipelas, Surgical, Treatment of.—In the treatment of wounded individuals, great care should be taken to remove all sources of foul and unwholesome exhalations, and to keep up a constantly renewed supply of fresh air. Unremitting attention should also be paid to the cleanliness of the patient and everything about him. The night-linen ought to be frequently changed, and not be allowed to remain when soiled by discharge. The motions should be at once removed, and a solution of carbolic acid, chloride of lime, or some other antiseptic, be poured into the bed-pan. The wound, or raw surface, should not be wiped with a sponge, but with tow or cotton-wool, which must immediately be thrown away or destroyed. The patient's bedroom should be emptied of all but indispensable articles of furniture, and bed-curtains be at once removed. The treatment of this form of erysipelas and diffuse cellular inflammation consists in supporting the strength of the patient by alcoholic stimulants and by tonics, the most effectual of which are quinine and the tincture of perchloride of iron. The bowels should be freely relieved from time to time. Bleeding and the application of leeches are now but rarely resorted to, and then only in cases of threatening inflammation of the brain in strong and full-

blooded patients. Ammonia is a valuable medicinal agent in bad cases of diffuse cellular inflammation from snake-bites and animal poisoning. In the local treatment of the severe forms of erysipelas, various agents have been used. Of these, perchloride of iron, sulphate of iron, tincture of iodine, and nitrate of silver, or lunar caustic, have proved the most useful. In the absence of surgical aid, the simplest and best local treatment would be the application, around the inflamed parts, of flannels dipped into boiling water, and then well wrung; or of linseed-meal poultices, to which, when there is a profuse and ill-smelling discharge of pus, charcoal, carbolic acid powder, or chloralum should be added.

Erythema (*Gr.* *eruthe'ma*, redness; from *eruthalno*, I make red).—This is a redness or congestion of the skin. It characterizes the early stages of other affections produced by irritating causes. It appears as a non-elevated rash, red in colour, either diffuse, or else as small circumscribed spots or patches. It may be due to external causes; but is frequently due to constitutional disturbances, particularly to acute indigestion in children. It tends rapidly to disappear upon the removal of the cause, and is in itself devoid of importance. These suddenly appearing, diffuse, often scarlet rashes assume occasionally great importance, from the fact that they sometimes simulate, and are occasionally mistaken for, the eruptions of more serious diseases.

A child three years old, previously well, was seized during the night with vomiting, and complained of sore throat. Intense fever followed. At daybreak, the whole surface of his body was covered with a bright scarlet eruption. His parents were greatly alarmed, and the fact that they were living in a crowded watering-place hotel added to their consternation, as they were convinced that their youngster had scarlet-fever. The fever rapidly subsided, however, within a few hours; the rash vanished as abruptly as it had appeared,

and the next day the boy was as well as ever. It was a case of erythema associated with indigestion from improper diet.

Erythema, Treatment of.—The various forms of erythema are more or less associated with a rheumatic habit or condition of body; and very frequently there will be considerable joint-pain with them. They are generally due to indiscretions of diet and to the effects of cold in checking the secretion of the skin.

The treatment is generally laxative and cooling. But little need be done locally; a little wash of bicarbonate of soda, or lead and opium, will often prove very grateful.

Esophagus.—See CESOPHAGUS.

Essence of Beef.—Take a pound of gravy beef, free from skin and fat, chop it fine, put it into a mortar along with three tablespoonfuls of soft water, and pound it; then allow it to soak for two hours, put it into a covered earthen jar, with a little salt, the edges of the jar being cemented, and a cloth tied over the top. The jar should then be placed in a pot half full of boiling water, and kept on the fire for four hours. It should then be strained through a coarse sieve, so that not only the fluid, but also the smaller solid particles of the meat, may pass. Two teaspoonfuls or more of this may be given at a time when there is great debility.

Essences, Artificial Fruit.—See FRUIT ESSENCES, ARTIFICIAL.

Essential Fever.—See FEVER, CHARACTERISTICS OF.

Etching.—See HARMFUL OCCUPATIONS.

Eustachian Tube (from the name of its discoverer, Eustachi, or Eustachius, who died at Rome in 1574).—The Eustachian tube is the only normal aerial communication between the throat and the drum-cavity. It opens into the upper and back part of the throat, in that part of the

latter called the pharynx, a little above the floor of the nostrils. It passes upward, outward, and backward to the cavity of the drum, forming an angle of 40° with the horizon, and an angle of 135° with the external auditory canal. The mouth of the tube in the pharynx is wide, but from this point the tube narrows rapidly to what is called the isthmus, from which it widens again to form the tympanic mouth as shown in Fig. 1 (see page 310).

The entire length of the Eustachian tube is a little more than one inch. The mouth of it, in the pharynx, is about $\frac{3}{4}$ of an inch high and $\frac{1}{8}$ of an inch in width, the isthmus is $\frac{1}{8}$ of an inch in width, and the tympanic mouth is $\frac{1}{8}$ of an inch in height, and about $\frac{1}{16}$ of an inch wide. About two-thirds of the tube is cartilaginous, the other third being of bone. (Fig. 1: 6, 7.) A cross section of the bony portion would be circular in outline, while a cross section of the cartilaginous portion would resemble a shepherd's crook. (Fig. 2: 1, 4.) This crook-shaped wall of cartilage is really the posterior and upper wall of the tube, the anterior and lower wall or side of the tube being composed of a membranous tissue to which muscles are fastened. It is the action of these muscles which opens the tube by drawing the front wall away from the back wall. It is also observed by consulting Fig. 2, that the calibre of this tube is a linear one, and not circular, as in the bony portion. It is an offshoot of these muscles which forms the stretcher muscle of the drum (*tensor tympani*).

Fig. 1 gives a view of the inner surface of the right temporal bone, and various other parts of the apparatus of the ear. 1, 2, and 14, inner surface of the temple; 3, head of hammer bone; 4, the tensor tympani, or stretcher muscle of the drum; 5, mouth of Eustachian tube, in throat; 6, the narrow isthmus of tube, and, 7, its opening into the drum-cavity; 8, drum-head; 9, 10, mastoid cell; 11, handle of hammer; 12, anvil bone; 13, short limb of latter, attached to outer bony wall of drum-cavity. This also marks the entrance to mastoid cells, 9, 10.

In Fig. 2 we have a transverse section through the Eustachian tube. 1, cartilaginous upper and back wall; 2, the cavity of the tube proper; 3, the front wall composed of muscle; 4, the hook-shaped part of the upper wall, curving forward to join with the muscular wall. This hook-shaped part moves with the muscles with every act

affect the Eustachian tubes, as they are lined with the same mucous membrane, and are of course very close together. It is the simultaneous affection of the Eustachian tube in an ordinary cold in the head that gives the stuffed feeling and alteration of sounds in the ear. This stuffed feeling should not be neglected if it does not past

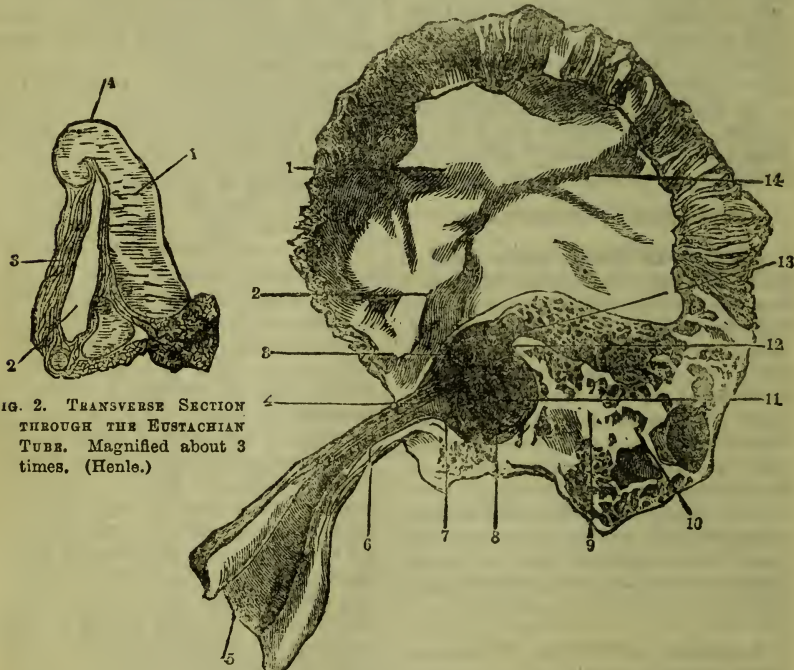


FIG. 2. TRANSVERSE SECTION THROUGH THE EUSTACHIAN TUBE. Magnified about 3 times. (Henle.)

FIG. 1. VIEW OF INNER SURFACE OF RIGHT TEMPORAL BONE, AND OF THE INNER SURFACE OF DRUM-HEAD, ALSO OF THE EUSTACHIAN TUBE AND MASTOID CELLS IN SECTION. Natural Size. (Politzer.)

of swallowing, and aids in widening the cavity, 2, through which air passes to the inside of the drum.

Eustachian Tube, Diseases of the.—The diseases of the Eustachian tube amount to diseases of the ear. A cold in the head, or a sore throat, may, at any time,

off in a few days. Should it continue, it will show that more than ordinary swelling has occurred in the tube, and it will be found that the hearing is slightly impaired.

Usually, as the cold passes off, this peculiar feeling in the ear or ears passes away. If this does not take place, and the tube is allowed to remain closed up, with the con-

sequent stopped feeling in the ear, the tube falls into a chronic state of inactivity and inability to open itself at every act of swallowing. The stoppage of the Eustachian tube, especially in little children, is

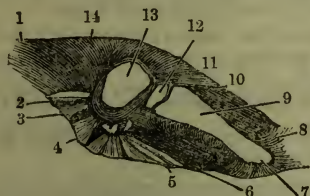


FIG. 1.—VIEW OF THE LEFT TYMPANUM, OR DRUM-CAVITY, FROM ABOVE, AFTER REMOVAL OF THE ROOF.

Magnified between 3 and 4 times. (Helmholtz.)

one of the most fruitful sources of earache and deafness. Professional advice should at once be taken.

In Fig. 1 is shown, 1, entrance to Eustachian tube and the throat; 2 and 6, the chorda tympani nerve, marking also the boundary of the so-called pouches of the drum; 3, front ligament of the hammer; 4, supporting spine of bone; 4-5, external ligament of support of the hammer; 7, attachment of the short limb of the anvil to

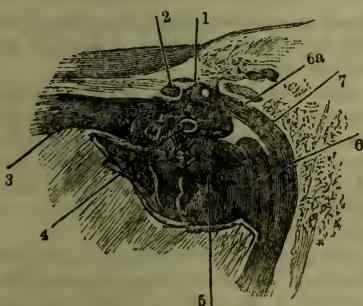


FIG. 2.—INNER WALL OF DRUM-CAVITY. LEFT SIDE.

Magnified twice. (Henle.)

the drum-cavity; 8, ligament of support for latter; 9, body of anvil-bone; 10, the stirrup muscle; 11, the head of the stirrup

—rest of bone invisible from this point; 12, joint between anvil and hammer; 13, head of hammer; 14, the stretcher muscle of the drum, running from the Eustachian tube across the drum-cavity to the hammer.

In Fig. 2 are exhibited, 1, facial nerve entering its canal; 2, tendon of stretcher of the drum cut across; 3, Eustachian tube; 4, the stirrup-bone in oval window; 5, the promontory under which, in dark cavity, is round window; 6, the stirrup muscle; 6a, its tendon; 7, the canal in which the facial nerve runs.

Evaporating Lotion.—See LOTIONS.

Examination Prior to Labour.
—See LABOUR, PREPARATIONS FOR.

Excess in Eating and Drinking.—Whatever the individual opinion may be on the temperance question, it is certain that nowadays there is to every one an abundance of warning as to the effects of alcoholic excess. The value of temperance in the other pleasure of the table is, however, not so often lauded or appreciated. Not long since, in a company of so-called temperance people, we joined a group of men who were discussing with much warmth of feeling the amount of money yearly wasted in this country on alcoholic drinks. Jolly, well-fed reformers were they, with rotund and placid outlines which bespoke habitual good cheer and good digestion. Each, during the day, had had his usual overplus of food, yet each soon swept from the table a most bounteous quantity of the expensive luxuries furnished by the generous host. Ten, twenty, thirty, perhaps forty pounds' worth of provision gone to weigh down stomachs already overcrowded, to enrich blood already too richly fed, to still further choke emunctories already clogged up with the surplus of food daily furnished beyond the wants of the system. Injury to the system from alcohol is great, injury from gluttony only less. The yearly waste of money in alcohol in this country is frightful, that of superfluous

food only less. Almost every one eats more food than is required; indeed, the system is so constructed as to provide for an habitual over-supply of food. The meat that is not needed is soon broken up in the blood into substances which are incapable of forming tissue. These substances are really poisonous, and, if allowed to remain, produce grave injury; but in the skin, in the intestines, in the kidneys, they meet with thousands of glands whose duty it is to remove them from the blood. These glands are the so-called *emunctories*.

The power of these excreting glands is limited; they are only capable of so much labour. When a great excess of food is habitually taken, they are habitually overworked. The blood, under these circumstances, becomes loaded with improper materials; and it may be that the gouty habit is created, which in turn is prone, sooner or later, to produce degeneration of the walls of the blood-vessels, resulting in apoplexies.

The man who gets an occasional jolly hour from a moderate potation is, perhaps, morally, no more a sinner than he who gets an occasional heavy night from over-indulgence at the table; and appears, also, to suffer no more of permanent physical ill. It is the habitual over-eating or the habitual drinking which plays havoc with vitality. Almost every well-to-do person eats more than is necessary for the requirements of the system. Nature, no doubt, has provided for the removal of this excess; but overwork brings on feebleness to the eliminating glands, and an excess of noxious matter in the blood is a constant irritation to the emunctories; enfeebled and irritated, no wonder these long-tried but faithful servants become fatally diseased. The food principles are chiefly taken out of the body by the kidneys. Hence it is an overplus of food, containing much of the nitrogenous principles, *i.e.*, meat, which is specially liable to overwork and irritate the kidneys. We believe that many seemingly inscrutable cases of chronic disease of the kidneys depend upon excessive flesh-eating.

Excess of Sleep.—This is very bad in its influence, produces dulness of mind and body, corpulency, disposition to apoplexy; hence, Galen calls sleep “the brother of death,” and says nothing is more pernicious when carried to excess.

Lord Chief Justice Coke has laid down a rule for sleep in the following couplet:—

“Six hours in sleep, in law’s grave study six,
Four spend in prayer, the rest on nature fix.”

This has been somewhat modified by Sir William Jones:—

“Six hours to law, to soothing slumber seven,
Ten to the world allot—and all to heaven.”

Exercise (*Lat.* *exerceo*, I drive forward; from *ex*, out; *arceo*, I drive).—The term “exercise” as usually employed signifies the action of the voluntary muscles; that is, those which are under the control of the will. Since not only the circulation of the blood, but also the formation of its elements, and the destruction of those elements when worn out and useless, are powerfully and as a rule favourably influenced by this action of the voluntary muscles, it is obvious that without such movement health will almost inevitably be impaired or lost. According to Cheyne, “The studious, the contemplative, the valetudinary, and those of weak nerves, if they aim at long life, must make exercise in a good air part of their religion.”

The more luxuriously you live, the more exercise you require; the *bon vivant* may depend upon the truth of the advice which Sir Charles Scarborough gave to the Duchess of Portsmouth: “You must eat less—or take more exercise—or take physic—or be sick.”

Compared with such medicine as healthful exercise, “the most sovereign prescription in Galen is but empirical, and, to this preservative, of no better report than horse-drench”; so that he who makes good use of it may well declare, “I will make a lip at the physician,” and is almost disposed to exclaim, with Macbeth—

“Throw physic to the dogs, I’ll none of it!
Out, loathed medicine; hated poison, hence!”

Exercise, Appetite and.—See APETITE AND EXERCISE.

Exercise, Bodily, Necessity for.—See BODILY EXERCISE, NECESSITY FOR.

Exercise, Clothing and Food in.—During exertion no clothing should be worn which interferes with the free play of the chest: a larger amount of carbon should be furnished in the nourishment, and experiment has shown that this is more efficient if supplied in the form of fatty than of starchy food. Furthermore, since alcohol has a tendency to lessen the quantity of carbonic acid given off by the lungs, it should not be used in the shape of brandy, whisky, or wine during exercise.

Exercise, Deficiency of.—Deficiency of exercise, as is well known, is apt to lead to weakening of the heart's action, probably from its dilatation, or swelling up, while its substance grows thinner, or from a change (which is frequently observed, in fact) of this muscular structure into fat (fatty degeneration).

Exercise During Pregnancy.—For the maintenance of good health during the period of pregnancy, fresh air and exercise are necessary. Outdoor exercise should be taken daily, and continued till as late a period of pregnancy as can conveniently be done. The best form of exercise is walking, and this must not be indulged in to excess. A woman must not at this time fatigue herself by taking too long walks; she should rather go a less distance and more frequently in a day than go so far that she is unfit for anything on her return home. As the later months of pregnancy are reached, and specially towards the close, the female naturally feels unable for much active exercise, and the amount should then diminish to suit her requirements; but as long as it is practicable she should be in the open air some part of the day.

Exercise, Effect of.—The most important effect of exercise is to be seen in the lungs when the circulation of the blood is hurried much above the ordinary rate. As a consequence of this greater influx of blood to be aerated, or rather oxygenated, in the air cells, the quantity of air inspired, and the amount of carbonic acid exhaled, are both largely increased.

Exercise for Adults.—See ADULTS, EXERCISE FOR.

Exercise for the Aged.—See AGED, EXERCISE FOR THE.

Exercise in Childhood.—See CHILDHOOD, EXERCISE IN.

Exercise in Old Age.—Exercise is necessary in old age to keep the body in a sound state, just as it is during the period of youth and adult life. Without it the skin and excretory organs cannot perform their functions aright, and the health must suffer in consequence. The exercise must not, however, be of a violent character. All violent exercise at this time is only calculated to do mischief. That which answers best is exercise of a passive kind, such as driving in a carriage. A walk taken leisurely, and not entailing any great physical effort, will also prove very beneficial, and so also may mild horseback exercise. All climbing of hills, and anything requiring great muscular effort, should, as a rule, be avoided.

Exercise in the Open Air.—All exercise should, if possible, be performed in the open air, and in every departure from this principle the nearest approximation should be adopted. There is no condition more necessary to the enjoyment of health than pure air; and as we consume more air when the muscular system is in activity than at any other time, we must endeavour to obtain it as pure as possible at that period. In cities, the air is necessarily impure, from the exhalations which arise on all sides, and the large

quantity of smoke diffused through the atmosphere. On this account, schools, where the physical as well as the moral education of children is regarded, should be as far removed from the smoky atmosphere as possible; and where this is not practicable, the purer air should be sought for, for the purpose of exercise, in the nearest outlet from town. Rooms in which a number of persons are breathing soon become contaminated, and we are frequently made acquainted with this condition of an apartment by the detection, on entering it, of a peculiar faint odour, which is soon lost when we mingle with the crowd. It is a prudent thing to attend to the admonition of our senses, and in no case is this more necessary than in the organ of smell. As disagreeable impressions of temperature or appetite are bad, so also are those of smell. By a wise Providence, odours dangerous to life are generally disagreeable, and cannot be too carefully avoided. What is more disagreeable, for example, than the smell of the smouldering wick of a tallow-candle? and a case is recorded of destruction to life from holding such a wick under the nose of a sleeping boy; or what is more delicious than a chestful of pure air on some bluff hill in the country? It is true that our senses become dulled by use, or the pursuit of other objects; the man or woman of the world would despise the thought of being indebted for any portion of their enjoyments to "common air," "air that everybody breathes." But after a season of London smoke, pure air has a chance of being estimated.

"It's indoors, sir," says Richard Jefferies, in "The Gamekeeper at Home," "as kills half the people; being indoors three parts of the day, and next to that taking too much drink and vittals. Eating's as bad as drinking; and there ain't nothing like fresh air and the smell of the woods. . . . There's the smell of the earth, too—'specially just as the plough turns it up—which is a fine thing; and the hedges and the grass are as sweet as sugar after a shower. Anything with a green leaf is the

thing, depend upon it, if you want to live healthy."

Exercise, Moderate.—Moderate exercise causes the muscles employed to increase in size, become harder, and respond more readily to the commands of the will; but if the exertion is too prolonged or excessive, the opposite effect is produced, and they begin to soften and waste. This fact gives us the foundation of a simple rule for determining when the physical strength is overtaxed by any habitual labour or athletic sport.

Exercise, Muscular, Robertson
on.—See MUSCULAR EXERCISE, ROBERTSON ON.

Exercise, Passive, for Invalids.
—The following method of passive exercise is given by Dr. Weir Mitchell in "Fat and Blood: and How to Make Them":—

"An hour is chosen midway between two meals, and the patient lying in bed, the manipulator starts at the feet, and gently, but firmly, pinches out the skin, rolling it lightly between his fingers, and going carefully over the whole foot; then the toes are bent and moved about in every direction, and next with the thumb and fingers the little muscles of the foot are kneaded and pinched more largely, and the inter-osseous groups worked at with the finger-tips between the bones. At last the whole tissues of the foot are seized with both hands, and somewhat firmly rolled about. Next, the ankles are dealt with in like fashion, all the crevices between the articulating bones being sought out and kneaded, while the joint is put in every possible position. The leg is next treated, first by grasping the areolar tissue, and last by industrious and deeper pinching of the larger muscular masses, which for this purpose are put in a position of the utmost relaxation. The grasp of the muscles is momentary, and for the large muscles of the calf and thigh both hands act, the one contracting as the other loosens its grip. In treating the firm

muscles in front of the leg, the fingers are made to roll the muscles under the cushion of the finger-tips. At brief intervals the manipulator seizes the limb in both hands, and lightly runs the grasp upwards, so as to favour the flow of the venous blood-currents, and then returns to the kneading of the muscles.

"The same process is carried on in every part of the body, and special care is given to the muscles of the loins and spine, while usually the face is not touched. The belly is first treated by pinching the skin, then by deeply grasping and rolling the muscular walls in the hands, and at last the whole belly is kneaded with the palm of the hand in a succession of rapid, deep movements, passing around in the direction of the colon.

"It depends very much on the strength, endurance, and practice of the manipulator how much good is done by these manœuvres.

"At first, or for a few sittings, they are to be very gentle, but by degrees they may be made more rough, and if the manipulator be a good one, it is astonishing how much strength may be used without hurting the patient.

"The early treatment should last half an hour, and should be increased by degrees to an hour, after which should follow an hour of absolute rest.

"The patient should be at once wrapped up as soon as manipulated.

"After the first few days keep the patient constantly lubricated with cocoa oil. Vaseline is also a good lubricant."

Exercise, Right Amount of.—

It may be fairly asked what is the amount of exercise a healthy man should take every day in order to promote and sustain the most perfect sanitary condition of his body? And this question is the more important because there is no doubt that great errors in this respect are frequently committed by whole classes of persons, chiefly in the direction of deficiency of exercise.

According to the late Professor Parker, certainly an eminent authority on sanitary science, we may consider that, in the most

healthy life of a vigorous man engaged in active labour in the open air, a full day's work will probably be equivalent to lifting three hundred tons one foot high; or, what of course is the same thing, equal to raising one ton to the height of three hundred feet. This, however, is a hard day's work, and, therefore, as an approximation, we may estimate that the daily amount of exercise for every man in good health ought to be equal to half this much: that is to say, to lifting a hundred and fifty tons to the height of one foot. It has been calculated that for an individual weighing one hundred and fifty pounds this amount of muscular exertion would be about equal to that put forth in walking eight and a half miles on level ground. If, now, we suppose that the expenditure of force in going upstairs and moving about the house is equivalent to a two-and-a-half-mile walk, this would reduce our allowance of open-air exercise to six miles every day, a distance which is by no means too great to be paced over by every vigorous man who wishes to attain long life, and enjoy good health up to old age. For women of average strength a smaller amount of pedestrian exercise, amounting to three or four miles daily, would generally be appropriate.

Amongst those engaged in studying at Oxford and Cambridge it has been proved by centuries of experience that, as a rule, the most indefatigable scholars make better progress in their studies if they take two hours out of their fourteen or sixteen working hours for constitutional exercise in rowing, walking, or cricket, than if they attempt to perform mental work continuously without allotting a proper period to mere bodily exertion.

To be beneficial, exercise ought always to be proportioned to the strength and constitution, and not carried beyond the point, easily discoverable by experience, at which waste begins to succeed nutrition, and exhaustion to take the place of strength. Exercise, also, ought to be regularly resumed after a sufficient interval of rest, in order to insure the permanence of the healthy im-

pulse given to the vital powers of the muscular system, and it is of the utmost consequence to join with it a mental and nervous stimulus. Those who go out only once in four or five days are always at work but never advancing, for the increased action induced by the previous exercise has fully subsided long before the succeeding effort begins; and so far as increased nutrition, strength, and greater aptitude for exertion are concerned, no progress whatever is made.

The quantity of carbonic acid given off from the lungs bears a nearly constant relation to the amount of labour performed, and in this we have a valuable guide to the relative usefulness, as promoters of health, possessed by different kinds of exercise. If the amount of air inspired, and therefore required by the body to carry off the carbonic acid formed, whilst lying down, be considered as the standard and called 1, we may show by direct experiment that standing up in the erect position raises the quantity of inspired air to 1.33; walking at the slow pace of one mile an hour nearly doubles it; walking at the rate of four miles an hour renders five times as much air requisite to carry off the carbonic acid; and riding on horseback necessitates the breathing of about four times as much.

Although an increased amount of outdoor exercise must be earnestly recommended as an important aid towards the restoration and maintenance of health, yet a caution must be entered against too great or too sudden alterations of their habits in this respect. Moreover, no greater mistake, from a hygienic point of view, can be made than in increasing the amount of physical exercise when the mind is overworked without a corresponding reduction of mental labour, and *vice versa*. Very often it is only by resting the brain more at the same time that the muscles are exerted longer and to a greater extent, that the required balance of action in the system is brought about, and health is restored or retained.

time at which exercise ought to be taken is of some consequence in obtaining from it beneficial results. Those who are in perfect health may engage in it at almost any hour, except immediately after a full meal; but those who are not robust ought to confine their hours of exercise within narrower limits. To a person in full vigour, a good walk in the country before breakfast may be highly beneficial and exhilarating; while to an invalid or delicate person it will prove more detrimental than useful, and will induce a sense of weariness which will spoil the pleasure of the whole day. Many are deceived by the current poetical praises of the freshness of morning, and hurt themselves in summer by seeking health in untimely promenades.

In order to prove beneficial, exercise must be resorted to only when the system is sufficiently vigorous to be able to meet it. This is the case after a lapse of from two to four or five hours after a moderate meal, and consequently the forenoon is the best time. If exercise be delayed till some degree of exhaustion from the want of food has occurred, it speedily dissipates instead of increases the strength which remains, and impairs rather than promotes digestion. This result is quite natural, for exercise of every kind causes increased action and waste in the organs, and if there be not materials and vigour enough in the general system to keep up that action and supply that waste, nothing but increased debility can reasonably be expected.

For the same reason exercise immediately before meals, unless of a very gentle description, is injurious, and an interval of rest ought always to intervene. Muscular action causes an afflux of blood and nervous energy to the surface and extremities, and if food be swallowed whenever the activity ceases, and before time has been allowed for a different distribution of the vital powers to take place, the stomach is taken at a disadvantage, and, from want of the necessary action in its vessels and nerves, is unable to carry on digestion with success. This is very obviously the case where the

Exercise, Right Time for.—The

exercise has been severe or protracted, and the consequence is so well known that it is an invariable rule, in the management of horses, never to feed them immediately after work, but always to allow them an interval of rest proportioned to the previous labour. Therefore, to use the words of Maynwaring: "*Eat not* until you be fully reduced to that temper and moderate heat as when you began, and when the spirits are retired to their proper stations." Even instinct would lead to this conduct, for appetite revives after repose.

Active exercise ought to be equally avoided immediately after a heavy meal. In such circumstances the functions of the digestive organs are in the highest state of activity; and if the muscular system be then called into considerable action, the withdrawal of the vital stimuli of the blood and nervous influence from the stomach to the extremities, is sufficient almost to stop the digestive process. This is no supposition, but a demonstrated fact; and accordingly there is a natural and marked aversion to active pursuits after a full meal. In a dog which had hunted for an hour or two directly after eating, digestion was found on dissection to have scarcely begun; while in another dog fed at the same time, and left at home, digestion was nearly completed.

A mere stroll, which requires no exertion, and does not fatigue, will not be injurious before or after eating; but exercise beyond this limit is at such times hurtful. All, therefore, whose object is to improve or to preserve health, and whose occupations are in their own power, ought to arrange these so as to observe faithfully this important law, for they will otherwise deprive themselves of most of the benefits resulting from exercise.

When we know that we shall be forced to exertion soon after eating, we ought to make a very moderate meal, in order to avoid setting the stomach and muscles at variance with each other, and exciting feverish disturbance.

It is the custom in many families and

schools, apparently for the purpose of saving time, to take young people for a walk about the close of the day, because there is not light enough to do anything in the house. Nothing can be more injudicious than this plan—for in the first place exercise once a day is very insufficient for the young; and even supposing that it were enough, the air is then more loaded with moisture, colder, and proportionably more unhealthy, than at any other time; and, secondly, the absence of the beneficial stimulus of the solar light, diminishes not a little its invigorating influence. For those, consequently, who are so little out of doors as the inmates of boarding-schools and children living in towns, and who are all at the period of growth, the very best times of the day ought to be chosen for exercise, particularly as indoor occupations are, after nightfall, more in accordance with the order of nature.

Exercise, Severe.—Muscular exertion very speedily increases the force and frequency of the heart's pulsations, and the amount of blood flowing through all parts of the body, including the heart itself, in a given space of time, is much augmented. The number of beats of the heart may be altered from about seventy, which is the natural rate, up to ninety, one hundred, or even one hundred and twenty to the minute. After the cessation of exercise, however, the beats fall below the usual number, and if the exertion has been very severe or long-continued, may descend as low as fifty per minute, and become intermittent. Going up a steep hill, or even a long staircase, gives rise to a very severe strain upon a fatigued heart, and is especially liable to bring on cardiac disease, although this, in fact, may result from any excessive exertion. Under these circumstances, actual rupture or bursting of the heart has been known to occur, the individual literally dying, in such instances, of that malady so rare in real life, but so terribly fatal to the heroes and heroines of novelists, "a broken heart." Very commonly, however, palpitation, en-

largement or disease of the valves of the heart, is brought on by excessive exercise, especially in ascending heights.

Severe muscular exertion increases the flow of blood in the small blood-vessels of the skin, and causes a profuse discharge of perspiration, which may be even doubled or trebled in amount. During active exertion there is little danger of chill, but immediately afterwards, and also during the intervals of rest, the skin should be so warmly protected as to prevent the least feeling of coolness of the surface. For this purpose flannel is by far the best covering.

Exercises, Gymnastic.—See GYM-NASTIC EXERCISES.

Exercises for the Lungs.—See LUNGS, EXERCISES FOR THE.

Experiments in Ventilation, Results of.—See VENTILATION, RESULTS OF EXPERIMENTS IN.

Expiration.—See DIAPHRAGM.

Exposure a Cause of Consumption.—See CLOTHES, PHILOSOPHY OF.

Exposure a Relative Term.—It cannot be too strongly impressed that exposure is a relative term. "One morning," says an American physician, "as the mists rolled away, I crawled out from under a pile of blankets, and, almost benumbed with the cold, shiveringly gathered together the embers of the dying camp-fire. A guide some yards off rose from the damp ground, where he had spent the night entirely unprotected except by the cotton shirt and pantaloons which hid his nakedness, and, looking at his coat hanging up in the tree overhead, said, 'I'll be goll darned if it warn't cold enough last night to put one's coat on.'"

External Ear (*Lat. externus*, outward).—The external ear comprises the auricle, that part usually called the ear, the auditory canal, and the membrana tympani,

or drumhead. The drumhead is really the partition between the external ear and the middle ear, or drum-cavity, and partakes in the structure of each of these portions of the ear.

Extraction of Teeth.—See TEETH, EXTRACTION OF.

Extract of Meat (*Lat. extractus*, drawn out from; from *ex*, out; *traho*, I draw).—The substance commonly sold as extract of meat is also known as juice of meat, Liebig's Extract, and in Latin *Extractum Carnis Liebigii*. The name of the late Baron Liebig, the great chemist, is especially connected with this compound, as he undoubtedly was one of the first to call attention to it as a valuable article of diet. In his "Familiar Letters on Chemistry," he devotes a letter to vegetable and animal food, and gives an account of their various chemical components. He shows that all animal flesh contains, besides fibrine, albumen, gelatine, and fat, certain other constituents, which may be separated from the rest by a simple process of infusion, straining, and evaporation. The substance thus obtained is extract of flesh.

This compound was not unknown to chemists before Liebig drew special attention to it, but they regarded it only as a remedy for disease and exhaustion, and recommended it as a resource for extremities of nature, and especially for the sick and wounded soldier on the field of battle, with sinking and ebbing powers. That which at one time was considered to be a last resource is now an article of daily consumption in our hospitals and households, and is almost as commonly used as tea or any other beverage.

A frequent inquiry is, in what consists the efficacy or advantage of Liebig's Extract? and the popular idea is, that, being a concentrated extract of pounds of flesh, it cannot fail to be extremely nutritious. But it is not so, and it will be surprising to those who believe in this doctrine to hear that the extract of meat contains little or nothing of

what may be said to be at all nutritious. The substances which go to form nourishment for the body are fibrine, albumen, and fat; but these are not present in the extract of meat. One hundred parts of beef contain the following constituents:—

1. Fibrine	4
2. Albumen	4
3. Gelatine	7
4. Fat	30
5. Mineral matter	5
6. Water	50
	<hr/>
	100

Let us contrast with this the composition of a hundred parts of Liebig's Extract of Meat:—

1. Creatine, creatinine, Inosic acid, osmazome	51
2. Gelatine	8
3. Albumen	3
4. Mineral matter	21
5. Water	17
	<hr/>
	100

The difference will at once be seen. The water has diminished by half, the albumen is less, and there is four times the quantity of mineral matter, and a set of substances is introduced which occupy half the bulk of the compound, and which are not noticed in the composition as beef itself at all. If, then, the extract of meat differs from beef and all other nutritious articles of diet, it is not in containing nutritious matter, but in the fact that the chemical compounds and mineral matters just mentioned are found in large quantities. It is to these, therefore, that we must ascribe the marvellous powers which the extract of flesh exerts on the human system. The chemical action of these products on the human body is imperfectly understood; but it is certain that when albumen, or fibrine, are partaken of alone, they will not digest or support life; but when in combination with these mineral matters found in the juice of meat, and of course present in every pound of meat, they are digested and appropriated to the nutri-

tion of the body. It therefore follows that Liebig's extract of meat, if partaken of alone, would in no way support life; but, in combination with bread, or eggs, or any ordinary food, it enables the stomach to assimilate all the nourishment contained in these articles, and provides sustenance for the failing powers at a much less cost to the digestion than if it had unassisted to extract what nourishment they contain. Our own individual experience will illustrate this. If we are hungry and eat dry bread, the appetite soon palls, and we soon give it up; if we take some cold water, we can consume more of the bread, and even with warm water, if flavoured with tea and sugar, still more. The latter evidently acts as an incentive. If we add salt to the water, the same effect is produced. But if we take a basin of soup—for soup is but a weak solution of the juice of flesh—we shall find that we can take into our stomachs with relish four or five times the amount of bread we could consume with cold or warm water alone. It appears as if the nervous system received a stimulant effect from the presence of these salts and creatine, and which enables the stomach to do its work with greater ease. As in the case of "a glass of wine," the exhausted nerves of the stomach are aroused to action, but with depressing after-effects; these salts of flesh stimulate the digestion, and produce no bad results at a future period. There does not appear to exist any evidence of the subsequent beneficial action of the organic substances found in the extract of meat. They may, like theine and quinine, supply more readily materials for the manufacture of working muscle and nerve than can be readily obtained otherwise. The theory that these salts assist in nourishing the nerves has recently been put forward, with his accustomed ingenuity, by Professor Agassiz; and, as the flesh of fish is known to contain more creatine than that of other animals, he recommends a diet of fish as especially adapted for the food of philosophers and those who work with their brains. The juice of flesh, or extract of meat, it will be seen, contains

no new product after its manufacture, but simply those constituents in a concentrated form, which are ordinarily present in the flesh of animals. The great advantage it confers is, that it is already fit for use. A teaspoonful of the extract in a pint of hot water is a stock for any soup, and admits of any variety of flavouring. For the dyspeptic, whose stomach cannot bear tea or coffee, it is an excellent beverage, and assists materially in the digestion of any solid food that may be taken with it. But beware of relying on Liebig's extract as a substitute for beef tea, which contains fibrine, fat, and albumen, all of them necessary to continue life. Liebig's extract alone will not supply nutrition to the body, but in combination with an egg, or bread, or toast, or anything that may be fancied, will enable the invalid with wasted powers to obtain all the goodness or nutriment these other things may contain. Hence, it is a most valuable adjunct to the invalid's table, or to the *ménage* of the ordinary cook, in whose hands it may be made to form the basis of many rich and well-flavoured soups. A mutton chop eaten alone, or even with tea or coffee, will frequently prove most indigestible, and the dyspeptic who seeks for nourishment will give it up as impossible. Let him, however, try with it, instead of tea or coffee, a cupful of Liebig's extract with salt and pepper, and he will find his chop nutritious and pleasant, and usually will require no other addition besides a little bread to his excellent meal. A portion of this preparation, partaken of at proper times, will often render recourse to alcoholic stimulants unnecessary, and supply the needful refreshment to the system.

Eye.—In the small space occupied by the eye, the organ of sight, and its appendages, all the anatomical elements of the body are represented, arranged with a delicate adjustment to each other, and an exquisite adaptation of every part to the great object of the whole, that render this little organ one of the wonders of Nature. Each part of the eye, and the appendages

with which it is surrounded, are described under their respective headings.—See ALMOND FORM OF EYE, EYELIDS, GLOBE OF EYE, SCLEROTIC COAT, etc., etc.

In Fig. 1 is shown a vertical section of the left orbit with its contents: *a*, the levator palpebræ superioris; *b*, the superior



FIG. 1. VERTICAL SECTIONAL VIEW OF THE LEFT ORBIT.

rectus; *c*, the optic nerve; *e*, the inferior rectus; *f*, the elastic cushion of fat upon which the eye rests; *c'*, the tarsal cartilage; *d'*, the cornea; *b'*, the lower eyelid; *b*, the crystalline lens; *c''*, the anterior and inferior part of the sclerotic; *c*, the cornea.

In Fig. 2 are shown the muscles of the left orbit viewed from the outer side by the removal of the outer wall of the orbit: *a*, the levator palpebræ superioris; *b*, the



FIG. 2. MUSCLES OF THE LEFT ORBIT.

superior rectus; *c*, the inferior rectus; *e*, the external rectus; *g*, the inferior oblique muscle; *f*, the superior oblique; *o*, the optic nerve round which the muscles are arranged; *d*, the internal rectus.

Eye, Almond Form of.—See ALMOND FORM OF EYE.

Eye, Dust in.—The most common form of injury to the eye is from particles of dust and small foreign bodies. As the course of the tears is from the gland at the upper and outer part of the ball towards the canal at its inner side, and as the lids are firmly attached to bone at their inner extremities, and only loosely to bone at their outer, such particles are usually washed by the flow of tears, and moved along by the action of the lids towards the space at the inner angle of the eye, which is called the tear lake. From this we remove them, almost unconsciously, with the end of the finger, or perhaps the handkerchief.

Occasionally a cinder or piece of coal, or some other object with projecting points, becomes lodged on the conjunctiva, and, as everybody knows from experience, is the cause of most acute pain. A smooth object rarely gives much pain, and is almost invariably passed on by the tears and the action of the lids. This process may be assisted by gentle rubbing of the lids, which, however, only makes matters worse when the offending mote has once taken hold.

It may be well to suggest that it is a very simple and easy thing to evert the eyelid, and that many hours of really serious suffering may often be saved by it, particularly in travelling. To do this, direct the sufferer to look well downwards, then, taking the lashes of the upper lid between the finger and thumb, stretch the lid downwards and outwards, place the point of a pencil on the upper part of the lid, above the top of the ball, and press it downwards while the edge of the lid is raised. The inner surface of the lid is thus exposed, and the cinder can be readily removed by touching it with a fold of a handkerchief. When the mote is just within the margin of the lid, it may sometimes be removed by drawing the upper lid well down and pressing it against the skin of the lower lid.

Eye, Foreign Bodies in.—If the object is under the lower lid, pull the lid down, direct that the eye be turned towards

the nose, and remove the particle, rubbing in the same direction with a camel-hair pencil, or a soft rag on the end of the finger. If the object be under the upper lid, lay a pencil or knitting needle across the lid till the object is seen; remove in the same way. If it adheres to the surface of the eye, as a bit of iron filing may, a physician should be consulted at once.

Eye, Particle of Iron in.—When the foreign body has lodged on the firmer tissue of the cornea, its extraction is not so simple a matter, and rubbing only presses it in more firmly. The particle is usually driven with some force, as from a hammer or turning lathe, but may be simply blown into the eye and imbedded in the cornea by pressing the lid against it. Often a minute piece of iron, that can scarcely be seen without a magnifying glass, will give rise to great pain and intense inflammation. If it is completely bedded, so as not to present any sharp point to scratch the lid in its movement over the cornea, the pain will be comparatively slight, but the resulting inflammation may be severe. A foreign body should always be suspected, if a violent inflammation is set up suddenly without apparent cause, particularly if one eye only is affected. Of course the only remedy is the removal of the offending particle, which should be accomplished without delay, but should not be entrusted to unskilful hands. Specks of iron and steel, however, may often be removed safely and promptly by the use of a strong magnet, which would be a useful thing to have at hand in establishments where workmen are liable to such accidents.

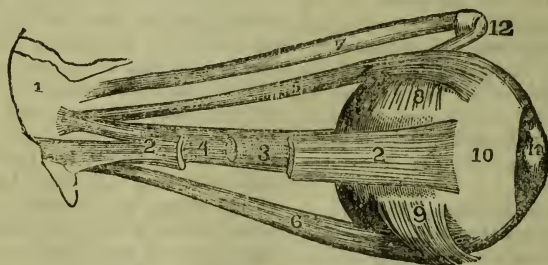
Eye, Quicklime in.—A not uncommon and a dangerous form of injury is that from lime splashed into the eye. Quicklime acts as a powerful caustic, and often causes complete blindness by destroying the vitality of the cornea. Even when the conjunctiva only is affected, the eye may be seriously disabled by a growing together of the raw surface of lid and ball. The lime should, of course, be instantly washed

out as thoroughly as possible with water, and any that may remain should be neutralized by bathing with a teaspoonful of vinegar in a glass of water, or rendered inert by sweet oil; the latter is equally efficient and more soothing. In case of injury by acid, one part of lime-water to three of water may be used, or the eye may be freely bathed in milk.

Eye, Wounds in.—Wounds made with pointed instruments, such as scissors or fork, frequently penetrate the cornea and injure the lens, when a cataract is formed; this in young people is usually absorbed, but in adults may require an operation for its removal.

of the eyeball itself, and the parts through which the rays of light pass to impinge on the retina, and affect the optic nerve behind it.

Eyebrows.—The eyebrows are formed of muscle and thick skin, covered with stiff hairs, and resting on a bony ridge above the edge of the orbit. The hairs are arranged somewhat like the straw on a thatched roof, and shed the perspiration that trickles down the forehead. Another useful purpose is shown by the way in which they are instantly drawn down when we are suddenly exposed to a dazzling light. They have æsthetic functions, too, as powerful organs of expression. A frown is produced by



EXTERNAL MUSCLES OF THE EYEBALL.

Eyeball.—The name given to that part of the eye which forms the actual organ of vision, and which is actuated by a series of muscles attached to it, as shown in the accompanying illustration, in which are exhibited the external muscles of the eyeball. 1, piece of orbital bone; 2, external straight muscle, with piece cut out; 3, optic nerve; 4, internal straight muscle; 5, upper straight muscle; 6, lower straight muscle; 7, upper oblique muscle attached to ball at 8; 9, lower oblique muscle; 10, sclerotic; 11, cornea; 12, pulley for tendon of upper oblique.

wrinkling and depressing the brows, while by elevating them we can express incredulity, surprise, or contempt, almost as plainly as by words. The word “supercilious” is derived from *supercilium*, the Latin term for eyebrow. The eyebrows may be considered almost distinctive in man; the seal has a few stiff hairs, and in some birds, as the falcon, they are represented by an arrangement of the feathers above the eye, but even our supposed immediate progenitors, the monkeys, cannot lay claim to them.

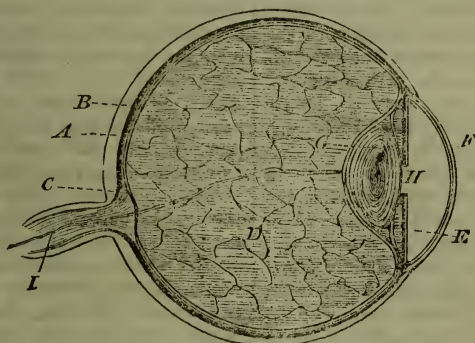
Eyelids.—The eyelids are composed of the skin, under which we find the fibres of the circular muscle which closes the eyelids, and a thin cartilage attached to the orbit by a ligamentous tissue; its margins are thick,

Eyeball, Section of the.—In the accompanying illustration is shown a vertical section of the eyeball, affording a view of the interior, the successive coats and lining

and furnished anteriorly with the eyelashes and posteriorly with mucous follicles. The eyelids are lined internally with a mucous membrane, called the *conjunctiva*, which is reflected from them over the anterior surface of the eyeball, thus forming a partial covering to it also. This membrane is continued along the lachrymal ducts, or passage for the tears, into the lachrymal sac, placed at the inner corner of the eye, and so, by the nasal duct, into the nose. The conjunctiva is kept constantly moist by means of its own secretion, and also by the tears which are secreted by the lachrymal gland (which see), which is placed at the upper and outer part

affect the whole system to an alarming extent. One of the most remarkable stories in Mr. R. B. Carter's valuable work on "Eyesight, Good and Bad" is the following, which illustrates this danger, and the relief which may be sometimes obtained from an accurate knowledge of it :—

"A young gentleman of good position, who was reading for honours at his University, suddenly broke down with symptoms which were attributed to some form of brain disease, and was advised to give up his studies and to go home. After a period of rest, being no better, he sought advice in London, where the opinion previously



SECTION OF EYEBALL.

In this, A is the Sclerotic; B, choroid; C, retina; D, vitreous humour; E, aqueous humour; F, cornea; G, crystalline lens; H, pupil; I, optic nerve.

of the orbit and above the conjunctiva. The opening between the lids is called the *commis-sure*, and the apparent size of the eye depends chiefly upon the width of this space. The actual size of the eye varies comparatively little in different individuals, but some eyes appear much larger than others because the lids are more widely opened. When an inflamed eye is kept constantly partially closed from an excessive sensitiveness to light, much anxiety is often caused by the conviction that it is becoming smaller.

Eyes and System, Connection between.—Disorder of the eyes may

given was confirmed; and, as a means of affording the most complete possible rest to his brain, he was advised to make a voyage to Australia and back. He did so, and returned in the same condition. He was then considered to be incurable, was told that he must abandon a career which had been open to him, and a matrimonial engagement which he had formed. In a word, his whole life was blighted. Ultimately, he was brought to me—not from any idea that his eyes were at fault, but merely that I might examine their internal circulation with the ophthalmoscope, in order to see whether this examination

would throw any light on the state of the circulation in his brain. I found his eyes . . . healthy, but myopic (or short-sighted) to five dioptries; and, on making inquiry into his symptoms, ascertained that they resolved themselves into simple inability to read. As soon as he took up a book, he became giddy; and the giddiness brought on intense headache, palpitation of the heart, and sometimes sickness. The case was of the simplest kind. The patient had never used spectacles, and, up to a certain point, he had been able to read well and easily; that is, he had been able to converge to eight inches in repose of his accommodation. When he began to work for honours, and to read eight or ten hours a day, the disproportionate exertion of the two functions could no longer be continued. The convergence muscles gave way; and then, as the two eyes were no longer directed to the same point, there was double vision. This, in its turn, produced giddiness; and the giddiness produced headache and sickness by disturbing the circulation. The strained muscles which had once given way became prompt to give way again when they were unduly called upon; and the grave view which was taken of the symptoms by medical men filled the patient with alarm. As soon as he tried to read, the old troubles were brought back by fear and expectant attention. I assured him that he had no brain disease, tried to make him understand his condition, prescribed spectacles to correct his myopia, and to diminish his convergence, and told him to wear them constantly, and to read in them three times a day for half an hour at a time. He was to report progress in three weeks; and at the end of that time he returned cured. He could read as much as he liked; he was going to be married in the following week; and, on returning from his wedding trip, was to take up the career which he had fancied closed to him for ever. All these pleasant anticipations were in due time fulfilled, and the cure was permanent and complete."

There are some expressions in this passage

which will be better understood by means of the explanations furnished in Mr. Carter's book, and to that the reader must be referred.

Eyes, Notes on Care of.—The following compilation from the works of distinguished ophthalmologists was made by the *Boston Journal of Chemistry*:—"For the worker the light should come as much as possible from the left side, that is to say, from the side towards which one turns in working. Daylight is the best; but direct sunlight and that reflected from mirrors should be avoided. The aspect should be northern, and the light should come a little from above. White walls should be avoided; highly varnished tables, and, in workshops, shining articles, like silk, should be protected from the sun's rays. Artificial light is always bad, on account of the heat and the exhalation of carbonic acid. The best is that of lamps furnished with a glass shade. Gas is bad, because of its heat, brilliancy, and mobility; the light of mineral oils is too hot; that of candles insufficient and flickering. The eye of the workman should avoid the light coming to him directly or diffused through the room. Working immediately after meals is objectionable; also uninterrupted use of the eyes for long periods of time. One should write on an inclined plane, and not keep the head bent down more than is absolutely necessary. Some good authorities commend washing the eyes with cold water; but the majority of the best ophthalmologists advise the use of hot water for the less serious affections of the eye. For tired eyes water hot as can be borne is refreshing and beneficial. If the eyes be fatigued by bad artificial illumination, blue or slightly smoked glasses will be useful, and, in order to avoid the lateral rays, they should be large and round. If the irritation of the eyes persist, all work must be abandoned, and an examination made to see if there be any disturbance of refraction, of power of accommodation, or of the mobility of the eyes. Presbyopia, or so-

called 'far-sightedness,' supervenes earlier with those who are constantly at work than with other individuals, and as soon as it does convex glasses should be at once resorted to, without which the muscle of accommodation would be fatigued to no purpose. At first they should be used for working in the evening, after the fatigue of the day; but a long-sighted person should only use spectacles for looking at near objects, not at far ones. Work requiring close application favours the development of myopia, or 'near-sightedness,' precisely in proportion as the conditions of illumination are bad. If the action of those causes continue, the myopia will increase until vision is lost. A slight degree of myopia may be favourable to close work, but, as a general rule, work requiring close application, by the derangement of circulation that it inevitably induces in the eye, is much more injurious to the myopic, and is the great cause of the development of myopia and its complications."

Eye-washes.—These are of several kinds; some are astringent and some sedative, while others produce a stimulating effect upon the eye. They all require to be used with caution; and some of them, such as lead, should not be used when the conjunctiva is abraded, as dimness is apt to result.

Astringent Eye-wash (No. 1).—Take of sulphate of zinc, six grains; rose-water, four ounces. Make a wash, with which the eye should be bathed three or four times a day. Useful in cases of inflammation of the conjunctiva.

Astringent Eye-wash (No. 2).—Take of dried alum, eight grains; distilled or rose-water, four ounces. Make a wash, and use as in the case of the former.

Astringent Eye-wash (No. 3).—Mix twenty drops of solution of subacetate of lead (*liquor plumbi subacitatis*) with two ounces of distilled or rose-water. To be used in cases of inflamed eyes, when there is no ulceration.

Sedative Eye-wash.—Take of extract of

belladonna, eight grains; distilled water, four ounces. Mix, and use in cases of inflammation of the eye, when there is pain and irritation.

Face, Nerves of the (*Lat. facies, face; nervus, from Gr. neuron, string or sinew*).—A dissection representing the superficial distribution of the facial, the fifth or trigeminal, and other nerves, is illustrated in the engraving on page 326: *a*, the infraorbital nerve; *b*, the external and internal frontal nerves; *c*, the temporo-auricular nerve; *d*, labial and mental branches of the inferior dental nerve; *e*, trunk of the facial nerves after its exit from the stylo-mastoid foramen; *f*, the great occipital nerve; *g*, the superficial cervical, great auricular and lesser occipital nerves.

Facial Angle.—The angle that is formed by two lines, one drawn through the external auditory meatus and the base of the nose, and the other from the most projecting part of the forehead through the incisor edge of the upper jaw.—*See SKULL, COMPARISON OF MAN'S AND MONKEY'S*, for illustration of directions of these lines.

Factory Act, 1878.—*See HARMFUL OCCUPATIONS.*

Facts in Favour of Vaccination.—*See VACCINATION, FACTS IN FAVOUR OF.*

Failure of Muscular Power.—*See MUSCULAR POWER, FAILURE OF.*

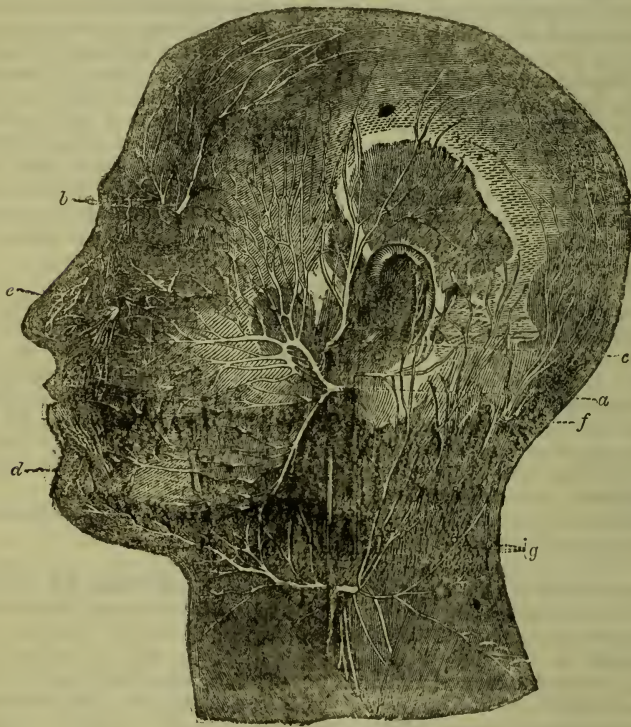
Fainting after Fracture of Bone.—It is not an uncommon occurrence, immediately upon the receipt of a fracture, for the person to faint away, in which case the horizontal posture, a little cold water, or a little sal-volatile, will speedily restore him. Sometimes the patient, soon after the accident, is seized with coldness and a shivering fit, in which case you may give him a little warm cocoa

or hot milk, and, as soon as may be strip off his clothes, and put him into a warm bed.

Fainting, Causes of.—The usual causes are fatigue, long fasting, sudden loss of blood, acute pain, overwhelming emotions

unusual exertion or emotion being evident, we may with propriety suspect some such lurking mischief.

Fainting in Pregnancy.—During the early months of pregnancy this troublesome condition is not of unfrequent occur-



THE NERVES OF THE FACE.

of the mind, and excess in diet. It may arise also from some structural disease of the heart, or the large arteries issuing from it. When the returns are frequent, and during the paroxysm, the breathing, though feeble, is anxious and obstructed, the face livid with a tendency to restlessness, and without any ordinary exciting cause, as

rence; but the time of all others when it is more particularly met with is about the period of quickening. It may occur with greater or less frequency; in some, giving rise to little annoyance, while in others, by recurring several times during the same day, it proves a source of great trouble to the patient.

Fainting, or Syncope (*Gr.* *sūng'-kope*, a cutting off; from *sūn*, together; *kop'to*, I cut off).—In fainting, the motion of the heart and lungs becomes feeble and imperfect, the sensibility and perception are diminished, the pulse is small and weak, the voice uniformly lost, and the face pale. It may occur suddenly and accidentally, ceasing without any tendency to recurrence; or it may recur at periods more or less regular, with occasional palpitation of the heart during the interval and impeded respiration during the fit.

Fainting, Symptoms of.—Fainting is easily distinguishable from other fits. Its symptoms are paleness of countenance, pulse and action of the heart very feeble, if not altogether imperceptible, respiration so slight as scarcely to be perceived, loss of consciousness with absence of convulsions, except in some cases at the moment of recovery from the swoon. After a longer or shorter interval, from a minute or two to some hours, perhaps, with only occasional partial recoveries, consciousness generally returns with slight motions of the lips and eyelids, sighing, more distinct breathing, and almost always with a general and copious perspiration.

Fainting, Treatment of.—The treatment consists in placing your patient in the horizontal posture on a bed, a couch, or on the floor, in dashing cold water over the face, admitting cool air, stimulating the nostrils with volatile salts, burnt feathers, or common snuff, and in applying mustard plasters for a few minutes to the soles of the feet, or inside of the legs, if the syncope lasts long and is not relieved by the other expedients. As soon as the patient is able to swallow, a little cold water, either by itself or having in it a teaspoonful or two of sal-volatile, or the same quantity of spirits, may be given.

False Pains.—Many women, especially those who are pregnant for the first time, are troubled with what are called false

pains. They may come on several days, or even longer, before the actual labour pains are felt. From true labour pains they may be distinguished by the uncertainty of their position. They may attack the belly, the loins, or the back. They recur perfectly irregularly, and have no influence whatever in causing the expulsion of the child. They may, however, if they continue long enough, merge into the true pains of labour, and only terminate in these.

When a female is subject to these pains towards the close of pregnancy, attention should at once be directed to the stomach and bowels, which frequently when disordered give rise to pains of this description. If the bowels are confined, a gentle dose of castor oil should be taken; and if the stomach appears to be at fault, the diet should be regulated. After the stomach and bowels have been attended to, should the pains still continue unabated, and the patient's nights be thereby rendered sleepless, medical advice should be sought. It is necessary not to allow these pains to go on long unchecked, as the patient's strength may become exhausted just as the true pains of labour are setting in, and her confinement in consequence be increased in danger.

False Ribs.—The five lowermost ribs, so called because one or two of them are loose at one end, and the cartilages of the rest run into each other instead of being separately prolonged to the *sternum*, or breast bone, as in the case of the true ribs. —See RIBS.

Fare, Universal Bill of.—See BILL OF FARE, UNIVERSAL.

Farmers, Duration of Life in.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Fascia (*Lat.* *fascia*, a band).—A term applied in anatomy to the feet and band-like expansion of a tendon, also called *Aponeurosis* (which see).

Fasting.—The remaining without food for a longer period than usual may *sometimes* be a useful proceeding, as a kind of negative remedy, for those who have been living too freely; but even then, abstemiousness—that is, the partaking of a reduced quantity of very plain food—is better than complete denial of aliment. Fasting, as a term, is more properly applicable to a condition in which the desire for food exists. When the appetite fails, as it does in disease, and its failure is a natural indication that the system is not in a fit condition to receive nourishment, it can scarcely be said that a person fasts. The power of fasting depends greatly upon habit, constitution, climate, and other contingent circumstances. It has been, and still is, the custom of many nations to take but one meal in the twenty-four hours; but if into that meal must be crowded the entire nutriment required for the body during that space of time, it is needless to remark that for some time after the individual can be fit for little beyond digesting his food, and that such a division of duties would ill suit the arrangements of civilized life, even if it could be followed without serious detriment to health. As a general rule, it may be said that it requires more than an average of constitutional vigour to enable an individual in this country and climate to do with even but two meals a day.

Fat.—Fat is a very important constituent of the body. It is found diffused around all the tissues. It is the fat that gives roundness and plumpness to the body. When it is deficient, persons are said to be thin or lean. In wasting diseases, as consumption and scrofula, the wasting arises from the loss of the normal fat of the body. In such cases it is usual to recommend a fatty diet, and cod-liver oil, or other animal oils.

Fat, Deposit of, a Sign of Old Age.—An important change very liable to accompany advancing years is the excessive deposit of fat, which, unfortunately, often

occurs just at the time when the muscular powers are deteriorating a little, and the corpulent condition, therefore, interferes with taking sufficient bodily exercise to ensure uninterrupted good health. This tendency may be diminished by attention to diet, and its unfavourable influence is often quite important enough to render faithful observance of the rules for avoiding obesity profitable. Calcareous or chalky degeneration of the arteries, etc., is a common and serious mode of decay in advancing life, due in part, perhaps, to errors in diet.

Fat, How to Grow.—It is the quality rather than the quantity of food that makes us fat or lean. The more we eat of some varieties of food, the leaner we shall become. The foods that produce fat are:—

1. Sugar and sweet substances, as treacle, honey, etc.
2. Saccharine fruits—sweet apples, peaches.
3. Starchy substances—bread, potatoes, cakes, etc.
4. Fat and oils—fat meat, butter-milk, cream, etc.

Those who wish to grow fat should live as much as possible on these substances. A very frequent mistake is to suppose that lean meat is fattening. Liebig, in experimenting on geese, found that a lean goose, weighing four pounds, gained five pounds in thirty-six days on maize only; of these five pounds, three and a half were pure fat. He obtained similar results by his experimenting with sugar.

Fats.—“Fats,” says Dr. J. A. Russell, “are equally necessary with the albumenoid substances, although they do not directly tend to the upbuilding of the body. The fats are one of the great sources of animal heat and force for work. Their use for producing heat every one knows from the way in which they are used in the Arctic regions. You all know how the inhabitants of these regions eat fat to a large extent, and eat it in a form which to us would be disgusting. I remember the late Professor Pillans tell-

ing how, in his young days, and that will be nearly a hundred years ago, the street lamps used to be extinguished in Leith through the Russian sailors who came into the town drinking the train oil contained in them. When people have to eat a diet in which fat is deficient, they begin to feel it very soon.

"Fats are very important, not only for affording animal heat and force for work, but also as tending to the assimilation and digestion of the other substances of a diet; and albumenoid substances are not properly digested unless in the presence of fat. Butter is the most agreeable way of taking fat when we have to take it by itself. Butterine or olcomargarine, which is made of mutton suet or lard, mixed with milk to give it the flavour of butter, is a perfectly wholesome fat, and the only objection to it is that many unprincipled dealers sell it under the name of butter. If honestly sold at an appropriate price, under its own name, it would be a most legitimate article of commerce, and one which would be welcomed as affording a good source of fat for the people. Fats are rather hard to digest by themselves, and therefore one, easily digested like butter, is very valuable. That they assist in the digestion is shown by the administration of cod-liver oil in small doses. It is then given, not so much for the sake of the small quantity of fat contained in a teaspoonful of oil, but to promote the digestion and assimilation of other substances. In fact, it is sometimes given in cases of stoutness arising from indigestion, in order to make the patient thinner. The late Professor Bennett alleged that the dearth of butter was one of the causes of consumption.

"Now fat is contained in a large number of articles of food. Human milk, for instance, contains 3 per cent.; bacon, 70 per cent.; wheat bread, 1 per cent.; rye bread, 1 per cent.; and potatoes, 0·2 per cent., being only one-fifth of that in bread."

Fear.—Fear is the dread or apprehension of any object or event, which object or event, however, is sometimes purely imaginary. Absence of fear is resolution or

courage. Absence of all *dread* would be a repose of the soul for which, as it cannot exist, the language affords no term. Dread is a minor species of affright or terror, but of a more enduring nature. The highest and most excessive state of terror amounts to a total deprivation of consciousness, and produces death. If these definitions are correct, a smaller degree of terror would consist in a quickly passing unconsciousness. Dread would consequently consist of a succession of recurring periods of unconsciousness, alternating with excessive rapidity with intervals of consciousness, of which only the total impression is perceived (as in the vibratory strokes of vibrating bodies in acoustics): this total impression constitutes dread. Fear is only distinguished from dread through the imminence of danger, and hence a fearful or a dreadful or frightful object are nearly synonymous. The longer these periods of unconsciousness endure in a state of fear or dread, the more powerful are the feelings, till at length (as in drowning persons, or in children who are much alarmed) total unconsciousness ensues, and, according to circumstances, death.

If these definitions of fear and dread are psychologically correct, they serve to explain all the consequent physiological phenomena. A violent blow upon the head deprives us of consciousness by occasioning an interruption in the regular functions of the brain, through which recollection ceases and unconsciousness ensues. Any horrible appearance to, or impression upon, the organs of sight may produce a similar effect; for if the nerves of vision are so powerfully affected as to react upon the brain, the regularity of its action is similarly destroyed, and the same effects are produced as by a blow. It is the same with all the other senses; and it is worthy of remark, that these feelings (of fear or dread) evidently heighten the powers of the imagination. If, therefore, a powerful affection of the visual nerve will produce absolute terror, so may a smaller degree of terror produce the more lasting sensations of dread or fear, *i.e.*, interchanging pauses of consciousness and

unconsciousness. With the brain and spinal marrow the nerves are connected which lead to the lungs, to the stomach, to the muscles, and other parts of the body. It is therefore not surprising that dread or fear should display itself in shortness of breath, irregularity of pulsation, an increased action of the heart, a disordered stomach, sickness, and powerlessness of the limbs.

Fear may be also produced through a disordered action occasioned by some local affection of the heart or the lungs, or through plethora or disorders of the blood, or through a general sickness, as in the cholera.

Fear is a passion somewhat similar to grief, for it weakens the powers of the body and mind in various degrees according to the different stages of it. It has been known to produce lunacy, and in its highest fit of terror to prove, as we have said, even fatal. Bashfulness, anxiety, and terror are all different modifications of it. It particularly favours the attack and increases the malignity of epidemical diseases, and by producing a weakened circulation of the surface gives rise to various cutaneous affections and other ills, as palsy, loss of speech, epilepsy, etc. The treatment under violent degrees of it should be the same as that suited to spasmodic maladies, by first removing the spasm produced, and then promoting the different evacuations that may be interrupted.

Fear, Anxiety and, Power of. —See ANXIETY AND FEAR, POWER OF.

Fear, Physical Effects of.—The physical effects produced by fear have been described with such vividness by Mr. Darwin in his "Expression of the Emotions in Man and Animals," that we cannot resist the temptation of making the following quotation from that most valuable work:—

"Fear is often preceded by astonishment, and is so far akin to it that both lead to the senses of sight and hearing being instantly aroused. In both cases the eyes and mouth are widely opened and the eyebrows raised. The frightened man at first stands like a

statue, motionless and breathless, or crouches down as if instinctively to escape observation.

"The heart beats quickly and violently, so that it palpitates or knocks against the ribs; but it is very doubtful if it then works more efficiently than usual, so as to send a greater supply of blood to all parts of the body; for the skin instantly becomes pale as during incipient faintness. This paleness of the surface, however, is probably in large part, or exclusively, due to the vaso-motor centre being affected in such a manner as to cause the contraction of the small arteries of the skin. That the skin is much affected under the sense of great fear, we see in the marvellous and inexplicable manner in which perspiration immediately exudes from it. This exudation is all the more remarkable as the surface is then cold, and hence the term a cold sweat; whereas the sudorific glands are perfectly excited into action when the surface is heated. The hairs also on the skin stand erect, and the superficial muscles shiver. In connection with the disturbed action of the heart the breathing is hurried. The salivary glands act imperfectly; the mouth becomes dry, and is often opened and shut. I have also noticed that under slight fear there is a tendency to yawn. One of the best marked symptoms is the trembling of all the muscles of the body, and this is often first seen in the lips. From this cause and from the dryness of the mouth the voice becomes husky or indistinct, or may altogether fail.

"As fear increases into an agony of terror, we behold, as under all violent emotion, diversified results. The heart beats wildly, or may fail to act, and faintness ensues; there is a death-like pallor; the breathing is laboured; the wings of the nostrils are widely dilated; there is a gasping and convulsive motion of the lips; a tremor on the hollow cheeks, a gulping and catching of the throat; the uncovered and protruding eyeballs are fixed on the object of terror, or they may roll restlessly from side to side. The pupils are said to be

enormously dilated. All the muscles of the body may become rigid, or may be thrown into convulsive movements. The hands are alternately clenched and opened, often with a twitching movement. The arms may be protruded, as if to avert some dreadful danger, or may be thrown wildly over the head. The Rev. Mr. Hagenauer has seen this latter action in a terrified Australian. In other cases there is a sudden and uncontrollable tendency to headlong flight; and so strong is this that the boldest soldiers may be seized with a sudden panic.

"As fear rises to an extreme pitch, the dreadful scream of terror is heard. Great beads of sweat stand on the skin. All the muscles of the body are relaxed. Utter prostration soon follows, and the mental powers fail. The intestines are affected. The sphincter muscles cease to act, and no longer contain the contents of the body."

Febriacula.—See FEVER, CHARACTERISTICS OF.

Feeding Children.—As, during the period of childhood, growth is going on very rapidly, the amount of food taken requires to be of larger amount, proportionately, than it does in the case of adults. The number of meals given in the day need not exceed four; but rather than allow children to be constantly eating between times, a fifth regular meal may be introduced. They should be given at regular hours, so timed that each shall have time to be thoroughly digested before the other is given.

It is astonishing with what exclusiveness of understanding eating is regarded, even by intelligent parents, as the grand solution or panacea for all the pains and troubles which afflict the young. If a child falls over a stone and bruises its legs, its cries are immediately arrested by a sugar biscuit stuffed into its open mouth. If its temper is discomposed by the loss of a toy, it is forthwith soothed by an offer of sweetmeats, the ultimate effect of which is to excite colicky pains in the bowels, which

are worse than the original evil, and for which in their turn it is presented with nice peppermint drops, or some other equally pleasant antidote.

Because the mouth is open when the child is crying, and the mouth leads to the stomach, parents jump to the conclusion that it is open for the purpose of being filled, and proceed to cram it accordingly; forgetting all the while that the mouth leads also to the windpipe, and may be open for the admission of air to the lungs as well as of food to the stomach, and that if they stuff it with cake or pudding when it is open only for the reception of air, they run the risk of suffocating the little innocent when their only wish is to soothe him. Everybody must have seen fits of convulsive cough induced by fragments of food being drawn into the windpipe in such circumstances.

To confound crying and the expressions of pain with the craving of hunger is far from being a matter of indifference to the child. If food be given when it wishes only to be relieved from suffering, the offending cause is left in activity, and its effects are aggravated by the additional ill-timed distension of the stomach. But so far is the important truth from being sufficiently impressed on the minds of parents and nurses, that nothing is more common, when the infant refuses to swallow more but still continues to cry, than to toss it in the nurse's arms as if on purpose to shake down its food, and then resume the feeding. And in such attempts it is too true that the perseverance of the nurse often gets the better of the child, and forces it at last to receive the food at which it really loathes.

Let appetite, then, be the only rule, but allow it to appear, and do not attempt to provoke it. The breast ought not to be offered to the infant; it is for him to seek it. He has little need of sucking who takes it with indifference or as if he were concurring in a favour. He who is hungry acts very differently; all his gestures express clearly the want and the desire; his eye follows his nurse, and tries to interpret

her every movement. If he is crying, his cry ceases at her approach, and smiles replace his tears. If he is offered the breast, he seizes it with ardour, and the mother yields to a natural want. But it is far otherwise when real appetite is wanting, and it then becomes an act of cruel perfidy to tempt the infant by the offer of the breast. How can it be expected to resist the temptation when the adult, whose appetite is already satisfied at the festive board, yields to the solicitation of the host, and gorges himself with aliments which he cannot digest?

It has also been pertinently remarked, that the lower animals instinctively avoid this error, and instead of offering such too often, rather allow themselves to be strongly solicited before yielding to the wishes of their young. By this provident arrangement, the latter are protected from the evils of too frequently eating. Many mothers imagine that milk is so bland a fluid that it is impossible for an infant to take too much of it; but the fallacy of the notion is exposed when we recollect that milk is coagulated the moment it reaches the stomach, and that the real subject of digestion is curd—a substance not quite so light as milk.

Feet, Bare, for Children.—See BARE FEET FOR CHILDREN.

Feet, Blistered, in Walking.—See BLISTERED FEET IN WALKING.

Feet, Cold, and Sleeplessness.—See COLD FEET AND SLEEPLESSNESS.

Feet, Damp.—See DAMP FEET.

Feigned Diseases.—Diseases are most frequently feigned among soldiers and sailors to avoid duty and to obtain exemption from service; and by the beggar to gain sympathy, and thus obtain the fruitful harvest of alms he often reaps. Others often do the same to obtain better diet; prisoners to be exempt from prison labours; whilst yet another and not uncommon class of

feigned diseases are those in young women of an hysterical turn, who desire to obtain the sympathy of friends and neighbours.

A good classification of feigned diseases is into fictitious and factitious; the former having no real existence; the latter having real existence, but being of artificial and voluntary origin; for it is wonderful what tortures malingerers will inflict upon themselves or voluntarily undergo in order that they may attain their end. Frequently, among bodies of men, such attempts at imposture become epidemic, and can only be got rid of by sharp measures. No fixed order will be here observed, but the above distinction may be borne in mind.

Swellings of various kinds are often produced by soldiers and prisoners; they tie a piece of string tightly round the arm or leg, and so a swelling resembling dropsy is produced. Such are easily discovered by watching the supposed patient for an hour or two, when its effects will have disappeared, and no swelling be left. Windy swelling of the abdomen (tympanitis) is easily simulated by swallowing air, and as easily got rid of by a stiff dose of turpentine and castor oil. As for sores, manufactured or feigned, their name is legion. Ulcers of all kinds are favourite subjects of simulation. Corrosive substances are applied to a part either before or after the skin has been otherwise removed, and the sore thus formed is prevented from healing by similar means.

Skin diseases are also frequently feigned. Ophthalmia is very frequently manufactured among soldiers. All kinds of irritants are used, and the right eye is generally the one affected. Vomiting is frequently simulated, especially by women. The habit, once induced, is easily kept up, and, of course, should lead to emaciation and an appearance of disease. Most frequently, though not always, this is not the case when feigned. Diarrhoea is also most frequently simulated by women, who will introduce all kinds of things into their motions. Alterations of the urine have been tried to be passed off in a similar manner; and gonorrhoea has been feigned sometimes

with the worst intent. Blood spitting— hæmoptysis—is a favourite disease among simulating females. Sucking the gums will generally induce it, and it is not easy to detect it. Careful watching will usually elicit the truth.

Epilepsy or convulsions of any kind are favourite subjects of study and practice among rogues of the mendicant class. Among those who have much to do with such rascals there is a rather effectual, as being very powerful, way of detecting them. This is by thrusting some sharp body under the finger nail of the malingerer. It is not pleasant, but is generally effectual. Paralysis of all kinds is frequently feigned, but it needs a skilful impostor to escape detection. Very frequently this is easy; the physician makes an aside remark not intended for the patient's ear, stating that such and such a symptom is not quite as usual. Having taken care to state the reverse of what is actually the fact, he will generally find not long after that the symptom has appeared exactly as he pretended to say it ought.

Deafness and dumbness have often been feigned, sometimes with singular success. Blindness of various kinds and degrees are frequently feigned. Short sight used to be frequently feigned in the army among recruits. This was detected by giving him long-sight-glasses to read with. Of course, had he been short-sighted, this with such glasses would have been impossible. Usually the trick succeeded. Jaundice has sometimes been tried, as, indeed, have most diseases. Staining the skin with saffron or rhubarb was the commonest form of deception. Affections of the mind are very frequently assumed by criminals.

Fencing.—There is scarcely any gymnastic exercise better entitled to the attention of those who wish to enjoy health than that of fencing. The positions of the body in fencing have for their objects, exactness, firmness, and balance; and in practising that art, the chest, neck, and shoulders are placed in positions most beneficial to health. The various motions also of the arms and

limbs, whilst the body maintains its erect position, enable the muscles in general to acquire both strength and tone; and in young people the bones of the chest or thorax necessarily become more enlarged, by means of which a consumptive tendency may be avoided. Various instances may be adduced where fencing has prevented consumption and other disorders. It has been remarked also that those who practise this art are in general remarkable for long life and for the good health they enjoy. The celebrated Locke used to recommend fencing as a good exercise for health in the strongest terms.

Fennel.—This is an umbelliferous plant found growing wild in the countries bordering on the Mediterranean, and also on the sea-coast in parts of the United Kingdom. The seeds of fennel, as well as the leaves, contain an aromatic essential oil, which is also found in anise-seeds. Chopped leaves of fennel in melted butter form an excellent and palatable sauce to be eaten with mackerel. The leaves give flavour to several cordials.

Fermented Bread versus Unfermented.—The question as to whether aerated or unfermented bread is as good for the health as that ordinarily used, is one of great interest. On this subject Dr. Lankester may be quoted:—

“It has been stated,” he says, “that man has eaten fermented bread from the beginning of the world, and that it is necessary that he should do so, and that he instinctively prefers it; therefore it must be best for health. Now this statement is not correct, for the great mass of mankind do not ferment bread; for they cannot ferment rice or maize. But we need not refer to Chinamen or Indians, but to our Scotch neighbours, who, very many of them, never eat wheat bread, but unfermented oatmeal, and there can be no doubt that they flourish on this diet. I think, therefore, this argument in favour of fermented bread must fall to the ground.

"Then we may argue the matter as a question of taste. Well, if you like fermented bread best, there is an end of the question, and fermented bread has probably a sweeter flavour. During the fermenting process the starch has had a tendency given to it to change into glucose. In the aerated process there is no fermentation or change of the starch further than in the baking, and consequently fermented bread tastes sweeter in the mouth. The question is, Is that an advantage? In some cases it is a disadvantage, as the fermented bread passes into a change further than glucose. There are many persons who cannot eat sugar, apples, pears, grapes, or anything containing glucose. They can eat a little cane sugar, and that is all. Why? Because the stomach produces compounds which hasten the breaking-up of the glucose and its conversion into acids. Thus it is that on some persons fermented bread acts as a poison. Many people can take dry toast who cannot take new or soft bread, and persons under these circumstances prefer biscuits that have not been fermented at all; and it is in these cases that unfermented bread acts favourably.

"I must, however, leave the question now with you to determine for yourselves. I will merely say that there is not that attention paid to the process of baking among bakers, and certainly not among people who bake at home, that there might be. The consequence is that no two batches of bread are alike. Above all things, there is a necessity for attending to temperature during baking, and yet a thermometer, the only means by which temperature can be measured, is almost unknown among bakers. In Vienna, and many parts of Paris, they make much better bread, and a much more enjoyable bread, than we have in London. This arises from the scientific attention given to the process. Here we carry on most of our occupations as if an entire ignorance of their nature were a means to certain success. Is it then to be wondered at that, even in the manufacture of 'our daily bread,' we go to work in an expensive

way, and produce an inferior and often injurious article?"

Fever, Causes of (*Fr. fièvre*, from *Lat. febris*, fever).—The causes of fever may be divided into predisposing and exciting causes. Under the first class may be enumerated age, sex, occupation, and country. Children are very liable to measles and scarlet fever. Typhus affects people in middle life, and the majority are attacked after thirty years of age. Typhoid, on the contrary, is met with in the young, and the majority are attacked under thirty years of age. Relapsing fever is met with at all ages pretty equally, but it is very rarely fatal. Small-pox may attack people at any time of life if not guarded by vaccination. Sex has very little if any influence, although some are, by their occupation, more liable to catch some diseases than others. Country makes some difference; thus there are several disorders, as yellow fever, met with in tropical regions, but not heard of here; and again, typhus is more common in Germany than typhoid, while here both are very prevalent.

The exciting causes of fever are poverty, overcrowding, destitution, bad air, bad food, and bad water. It may be stated as a rule, that typhus and relapsing fevers are met with in overcrowded courts and alleys, and originate in a badly fed family; but when once the disease has been started in a town or village, it may soon spread rapidly among the better class of inhabitants. Typhoid fever, as is well known, is propagated by bad sewerage, which taints the air, or even bad water. The other fevers are not so much affected by these conditions, but they seem to be caught from one to another, and people of all classes are liable to the disease.

Fever, Characteristics of.—Fever is characterized, as we have said, by increased body-temperature. During its course we have also quickened circulation of the blood, arrested secretion, and rapid wasting of the tissues of the body. Fever

may constitute the whole sickness. It is then called essential fever. A fever may be due to some local disease or process of irritation in a particular part of the body. It then receives the name of irritative or symptomatic fever. As examples of essential fever we may mention the transient fevers known as ephemeral (because they last a day or so) or *febricula* (because it is a slight fever), typhoid, typhus, and the like. Here the fever is not a symptom of some other malady: it is the malady itself. As examples of irritative fever, that which follows a wound or a surgical operation, or which accompanies acute inflammation of some organ, as the lungs or kidneys, or the formation of an abscess; in these instances the fever does not constitute the primary disease: it is merely a symptom of it.

Those fevers which run an unbroken course to their termination are called continued; those in which the course of the fever is interrupted are called periodical.

Of periodical fevers, those having a regular period of abatement, without actually ceasing, are called remittent; those in which the fever disappears to return at short intervals, as the next day, or the second or third day, are called intermittent. Most of the periodical fevers are due to the influence of miasmatic poisons.

Fever, Diet in.—The diet during the progress of fever cannot be too simple; and if the anxiety of the nurse does not lead her to urge the patient beyond his inclination, there is little fear of its being carried beyond what is prudent, either in quantity or quality, for nature very kindly takes away the appetite when the powers of digestion fail, and when eating would consequently disorder the stomach and aggravate the fever. The patient's desire for cold water or other cooling drink may be indulged *ad libitum*, except in cases of sickness. A little plain gruel or milk porridge, with now and then a little weak broth, a cup of tea or coffee, with a little sopped toast, biscuit, or plain cake, when wished for by the patient, and a moderate quantity of ripe fruit, fur-

nish a bill of fare amply sufficient for every case of fever, until convalescence has commenced, unless in very severe cases, where the prostration of strength is great, and the quantity that can be taken very small, in which cases strong broth or arrowroot, with a little wine or brandy, or the yolk of an egg, either in a cup of tea or in a little milk, or in wine and water, may be administered, a tablespoonful at a time; but even in such cases more mischief is to be apprehended by over-stimulating than under-stimulating.

Fever, General Management of.—In the general management of fever, the chief points to which attention must be directed are these:—(1) to reduce temperature; (2) to control the force of the circulation and the frequency of the heart's action; (3) to re-establish the action of the skin, the kidneys, and the glandular system in general; and (4) to keep up the nutrition of the body by giving such food and in such quantities as can be best taken up by the digestive organs in their deranged state.

(1) Temperature is to be reduced by the abstraction of heat from the body. In mild cases systematic sponging of the surface with cold vinegar and water, or spirits and water, answers admirably. It is usually grateful and refreshing to the patient; it promotes cleanliness, and it tends to re-establish the arrested secretion of the skin at the same time that it removes heat. If cold sponging be uncomfortable to the patient, the lotion may be warmed, for it is the rapid evaporation of the thin film of fluid that lowers temperature, so that a grateful tepidity by no means defeats the object in view. Cool and slightly acid drinks may also be given in moderation. In graver cases more active measures, such as the ice cap, the wet pack, the cold bath, will be suggested by the physician in charge, who will at the same time prescribe medicines that will have an influence in lowering the heat of the body.

(2) The action of the heart and the force of the circulation are favourably influenced

by the greatest quietude that can be obtained both for the body and the mind. All excitement, all hurry, all visits of friends, and conversation on unnecessary topics are hurtful to the person ill of a fever. He should be placed on a firm, comfortable bed, his room should be large, airy, and well ventilated, and not darkened unless the light disturbs him. The footsteps of the attendants must be silent, their voices low, their manners quiet but firm.

(3) Cool sponging, the moderate allowance of cold water and acidulated drinks, tend to promote secretion whilst they lower temperature. The action of the glandular system is aided by acting upon the bowels by such remedies as magnesia, Rochelle salt, the solution of the citrate of magnesia, Pullna, Friedrichshall, or Hunyadi-Janos waters, at the same time that remedies directed to the kidneys and skin are used. It is often pleasant to wash the mouth with water containing a few drops of tincture of myrrh.

(4) The fever patient must be systematically fed. If the fever is a brief one, whose duration may be counted by hours, he will not suffer much by abstinence from food; but the fevers which last days and weeks make serious demands upon the resources of the kitchen. Systematic feeding means regular feeding in small quantities and at short intervals. By small quantities we mean two to four fluid ounces (four to eight tablespoonfuls) of strong meat broth for an adult, and by short intervals (two to three hours). In bad fever this must be kept up during the night.

The food must be as far as possible palatable, highly nutritious, and easy of digestion. We look upon meat broths, milk custards, the more delicate preparations of corn starch, farina, and so on, as the best fever foods. Wines, brandy and whisky are only to be given as ordered by the medical man in attendance; and in truth it is one of his most important duties to order in detail every article of the patient's food and drink as well as his physie, and to inspect his surroundings as well as to investigate his condition at each visit.

Fever, Homœopathic Treatment of.—For feverish attacks of a simple character *Aconitum napellus* is an effectual remedy, given every two, three, or four hours in doses of one drop of the tincture to one tablespoonful of water. For fever of a dangerous character, *Bryonia*, *Rhus toxicodendron* and *Arsenicum* are the remedies, with *Belladonna*, *Mercurius*, and *Sulphur* in scarlet fever.

Fever, Symptoms of.—The term fever is derived from a Latin word, *febris*, which is obtained in its turn from *ferveo*, which signifies "I am hot," or, "I burn." In common parlance we say that a person is feverish or has fever when the skin is hot and his pulse quick, not transiently, as after exercise, but permanently, for one, or two, or more hours successively. The concomitant symptoms are usually a sense of general uneasiness and fatigue, headache and watchfulness, a foul tongue, with thirst and loss of appetite. These symptoms are usually preceded or ushered in with general or partial rigors or chilliness, or a complete shaking fit; and they are very frequently, though by no means uniformly, succeeded by perspiration, which produces abatement of heat, headache, thirst, and quickness of pulse.

Fever, Use of Thermometer in.
—See THERMOMETER AS TEST OF FEVER.

Fever, Varieties of.—For each particular variety of fever, see under the special name of each disorder, namely:—AGUE, BILIOUS FEVER, CEREBRO-SPINAL FEVER, CHICKEN-POX, DIPHTHERIA, ENTERIC OR TYPHOID FEVER, ERYSIPELAS, ICTERIC FEVER, MEASLES, MALARIA, MILK FEVER, PUERPERAL FEVER, PYÆMIA, RELAPSING FEVER, RHEUMATIC FEVER, SCARLET FEVER, SMALL-POX, TYPHUS FEVER, YELLOW FEVER.

Fibrine, Albumen and.—See ALBUMEN AND FIBRINE.

Fibula (*Lat.* *fibula*, a buckle).—The outer and smaller of the two bones of the

leg. It is long and slender in form, the lower end forming the outer part of the ankle.

Figs.—In a perfectly dry state the fig is about as nutritious as rice. In the moist state, as it is imported, it will go considerably farther in feeding, and especially in fattening, or adding generally to the weight of an animal, than an equal weight of



FIG TREE, AND ITS FRUIT.

wheaten bread. Thus figs, as imported, and wheaten bread in its usual state, consist respectively of—

	Figs.	Wheaten Bread.
Water . . .	21	48
Gluten . . .	6	5 $\frac{1}{2}$
Starch, Sugar, etc.	73	46 $\frac{1}{2}$
	100	100

The fig, as it will be seen by comparing the above columns of the constituents of figs and wheaten bread, contains very nearly as much gluten as the latter, while in starch and sugar it is 27 per cent. richer.

Filberts.—This is a nut, the kernel of which contains a large proportion of mild oil, which is less in the filbert of this country than those of more southern ones. The round kernels are most esteemed. In eating them the skin should always be carefully peeled off, for it is apt to adhere to the throat a long time after, and to excite coughing. When fresh and well chewed, a small quantity of them is not unwholesome. They are

frequently made into comfits, and covered with sugar, which assists their digestion. Fine filberts, when ripe and freshly gathered, contain rather more than half their weight of edible kernel. Forty-eight out of one hundred parts consist of water, as a rule; the remainder is composed of albumen, oil, mucilage, cellulose, mineral matter, etc.

File - Cutting, Dangers of. —

File-cutters are chiefly exposed to injury from inhalation of particles detached from the work in the process of cutting the surface of the tool. Machinery is certainly much used now for making files, but a better article is turned out by hand.

Filter, A Good (*Fr. filtre; Ital. feltro, filter, felt*; the first attempt at filtering having been made through felted cloth).—A good filter, not so much for clearing water as for removing from it unwholesome dissolved impurities, is furnished by a charcoal block filter of condensed or compressed carbon. Filters of this sort may be purchased at a small cost. When they are clogged up with dirt, they should be scrubbed or gently scraped, and then cleansed by passing some permanganate of potash and hydrochloric acid through them.

Filter, Cottage.—See COTTAGE FILTER.

Filter, Pocket.—See POCKET FILTER.

Filter, To Cleanse.—A good way of cleansing a filter is to let the following preparation run through it: One quart of water, to which half an ounce of spirits of salt and a small bottleful of Condyl's purple fluid have been added. Pour this mixture into the filter at night, and the next morning let plenty of water run through it. Throw away all the liquid which filters through, till it has neither colour nor sour taste.

Filters, Materials for.—The best materials for filters are gravel and sand, if

sharp and clean; charcoal, especially well-burnt animal charcoal, or burnt bone; and spongy metallic iron.

These materials are not all mere filters or strainers. The charcoal and the spongy metallic iron remove not only suspended impurities, but, under favourable circumstances, some of those which are dissolved as well. But even the gravel and sand, through which the water supplied to London is filtered, do remove a small quantity of dissolved matter, about a twentieth of the whole amount present, or, say, a grain to every gallon. Animal charcoal, however, prepared by heating bones to redness in iron retorts closed from the air, does far better in this way than either sand or gravel. When fresh, it removes much dissolved organic matter, as well as mineral salts from the water passed through it.

Finger (*A.-S. fangan*, to take, seize, or clutch).—The name given to four out of the five digits of the human hand, the digit not so called being the thumb or pollex. The remaining digits are known as the index or first finger, so called because it is used in pointing out any object, or in speaking to enforce or lend emphasis to anything that



FINGER IN A STATE OF PARTIAL CONTRACTION.

the speaker is uttering; the middle finger, the ring finger, and the little finger. The fingers are closed or extended by the action of powerful tendons and muscles proceeding from the wrist, and extending over the palm of the hand, and along the under surface of

each finger. The action of the tendon in producing contraction is exhibited in the accompanying illustration.

Finger, Bruises of the.—In bruises of the finger by blows, or squeezes, or pinching, which is by far the more frequent occurrence, the pain is usually intense at first, particularly if the nail is implicated in the mischief, and the most relief is experienced from immersion of the part in warm water, and the application of warm poultices. In somewhat severer cases the nail ultimately falls off, and here poultices are the proper application during the shedding of the nail, and soap-plaster spread on thick leather as a defence to the part during the growth of the new nail. In other cases, the periosteum, or fine membranous covering of the bone, becomes inflamed, and in the progress of the treatment deep incisions become necessary; such cases must be referred to the surgeon; and *à fortiori* all cases of bruise combined with fracture of the bone.

Finger, Jammed.—When fingers are jammed by shutting a door or drawer, a most severe form of bruise results, as the door or drawer is usually closed with violence; now and then there is a wound of the skin, or the nail is torn half off. Few persons have escaped this accident, and it is, therefore, needless to say how excruciating is the agony produced for a few minutes. If the end only of the finger be nipped, the nail very soon blackens, in consequence of the blood escaping from the broken small vessels; and, being pent up beneath the unyielding nail, which it separates from its attachment beneath, causes pain for a few days till the sensitive parts become accustomed to its intrusion. The detached part of the nail dies, and, according to the extent of the mischief, the whole nail may die, and will be replaced by a portion of nail, or an entirely new one, which pushes underneath it from the quick, and very gradually thrusts the dead nail on to the tip of the finger till it is com-

pletely loosened and thrown off. In general, this process, after the first few days' pain, runs on without much inconvenience; but sometimes the injury is so great that inflammation of the nail-joint of the finger comes on, accompanied by great pain; matter is formed, and the whole nail is quickly thrown off, which, being done, the tender skin underneath it soon hardens, and has an ugly appearance; at length the new nail sprouts out from the root, and after some weeks again ornaments the finger.

Finger, Jammed, Treatment of.

—The most speedy mode of procuring relief after the occurrence of the accident is to plunge the finger into water as hot as can be borne. By so doing, the nail is softened and yields so as to accommodate itself to the blood poured out beneath it, and the agony is soon diminished. The finger may then be wrapped in a bread-and-water poultice. On the following or on the third day the blood has clotted; and separating into its clot and fluid parts, the pressure it makes on the sensible skin under the nail may be relieved by scraping the nail with a penknife till it becomes so thin that the scraping causes pain. The thin nail left then bridges, and the pressure is mitigated; but if the squeezed part of the nail be very black, and tender when touched, it is best, after scraping, to make a nick through the remaining nail over the black blood, and immediately the watery part gushes out; the pressure almost entirely ceases, and instantaneous relief is afforded; but it rarely prevents the nail being thrown off. If all the parts of the end of the finger be injured, nearly the same results follow as from an aggravated whitlow, and the whole bone, as well as soft parts, may mortify and be thrown off, or require amputation. This is not of rare occurrence with persons of an unhealthy constitution; and therefore a jammed finger is not to be lightly thought of. What has been said with regard to the fingers applies also to jammed toes, which are usually produced by the fall of heavy weights upon them.

Finger, Whitlow on, Through Bruise.—In some of these cases of bruises on the fingers the sheaths of the tendons become the seat of inflammation, and one species of whitlow is the consequence, which, as well as other kinds of whitlow arising spontaneously, requires leeching, fomentation, and poultices, and what cannot be too strongly impressed upon the mind of both patient and surgeon, an early free incision down to, and through, the inflamed sheath or membrane. This will, of course, be the business of the surgeon; but it becomes one's duty in such cases to urge an early application to the surgeon, and to assure the patient, which you may do with the greatest confidence, that the relief from intense pain will be immediate, and the mitigation of after suffering immeasurably greater than from any other kind of practice whatever.

Fire-Escapes.—The escape from a house which is on fire is sometimes prevented by the stairs being of wood, and either burning or already destroyed. In such an emergency, there are only two means of escape—issuing by the sky-light, and so reaching the next house, or going over the window. On this account, every house with wooden stairs should have a sky-light, accessible from the upper floors, and also some kind of apparatus for getting safely from the windows to the ground. The apparatus which meets with most general approbation is a rope ladder, and this may be made in different forms. Captain Manby recommends “a rope with nooses, distended by flat rests for the feet at convenient distances for stepping from one to another. In cases of danger, this might be instantly fastened by one end to a table or bed-post, while the other is thrown out of the window, thus furnishing a ready escape when, perhaps, there is no other possible means near those who are in momentary dread of being burned to death.” Such a ladder may be serviceably kept by private parties; and we should advise that at all events every house with wooden stairs

ought to be provided with one or more pieces of knotted rope, and these be deposited in the bed-rooms, for use when suddenly required. Where, from carelessness, no fire-escape of this kind has been provided, two or more sheets or blankets taken from the bed may be tied to each other by the corners, and thus a rope of sheets be formed. There are few instances on record of persons being burned to death in Edinburgh by fires in dwelling houses, although the buildings are more than usually high; the reason of which is that there the stairs are all of stone. Every fire-establishment in towns, besides fire-engines and buckets, should possess several long ladders, ready at all times to be applied to windows; also cords, which may be brought to bear wherever they are required. Portable ladders on the telescope principle are now not uncommon in our large towns.

Fire Gilding.—See MERCURIAL POISONING.

Fires in Sick Room.—To know how to put coal on the fire in a sick room without noise is certainly a desideratum. To effect this, bring the coal into the room rolled in a paper, and lay it, paper and all, in the grate. When it is necessary to have ashes taken up, or other disturbing work done, let it be managed as silently as possible.

Fish and the Brain.—It has been stated by many eminent authorities that fish diet, by virtue of the phosphorus which it contains, is pre-eminently adapted to nourish the brain, and that those who subsist on it largely are distinguished for their brightness and intellectuality. Now, while it is true that a small percentage of phosphorus enters into the composition of the healthy brain, and while it is also true that fish contains more or less of phosphorus, that may, and probably does, pass into the circulation, it is yet to be proved, either by theory or by the experience of mankind,

that a diet of fish is, on the whole, better adapted to supply the waste of the brain than a liberal variety of other alimentary substances, and especially of meats. On this subject a well-known American physician writes as follows:—

All the evidence of experience goes to show that fish not only does not increase the activity of the intellect, but that its effects, both temporary and permanent, are *distinctly the reverse*. It acts like a *soporific* or *sedative*.

Those who suddenly change from a generous mixed diet to one where fish takes the place of meat, often observe that they become sleepy and stupid during the day; a sort of laziness comes over them very much like that which those experience who indulge freely in milk or beer. This effect is by no means constant; but it is not unfrequent. I have frequently observed it in my own personal experience, and I have seen many who have made the same observation on themselves.

An intelligent patient of mine, an athlete, who has given considerable attention to the diet of gymnasts and muscle men, says that he once subsisted mainly on fish for ten weeks, living in all other respects as usual. He was troubled with drowsiness and stupor that made it hard for him to go through his daily duties. When fish diet is used pretty exclusively, these effects become a fixed condition; and therefore we find that fishermen everywhere, and nations who, like the Icelanders, subsist on fish, are sleepy, indolent, and phlegmatic.

What chemical principle in fish it is that produces this calming effect I cannot say. Possibly it may be phosphorus, for the phosphates, when given as medicine, do sometimes aid the sleep, and are therefore prescribed for insomnia.

To a far less degree fish acts like bromide of potassium—a remedy which, when given in large doses for months and years, is by some physicians believed to weaken the intellectual force.

Fish as Diet.—See DIET, FISH AS.

Fish as Food.—The class of fishes yields a larger number of species used as food by man than either birds or quadrupeds. There are but few fishes caught in the fresh waters or seas of Great Britain that may not be eaten with impunity. The flesh of some fish is poisonous, and upwards of twenty species are known that possess poisonous qualities (see POISONOUS FISH). In some countries the only animal food known is fish. The flesh of fish contains less nitrogenous matter than that of birds and mammals. It usually contains less oil or fat, and a larger quantity of mineral matters. Fish is not so digestible as butcher's meat, and therefore not so nutritious. Many fish are used for obtaining the oil which they possess, and this is especially the case with the shark and the cod. The livers of the latter yield the well-known cod-liver oil.

Salt-water fish are the best of any, as their flesh is more solid, more agreeable, and healthy, less exposed to putrescence, and less viscid. They possess these excellent qualities when fresh; when salted, they have all the properties of salt fish, and consequently its disadvantages. Those fish which have scales are, in general, the most easily digested, and the best; and of all these the fresh herring appears to deserve the preference. The *herring*, the *whiting*, the *sole*, the *codfish*, the *dory*, the *turbot*, and the *flounder*, are, perhaps, the most digestible and best of fish. *Salmon*, *mackerel*, *lobster*, and most other kinds of shell-fish, are very difficult of digestion and unwholesome.

The published chemical analyses of fish are very discordant. This arises, in great part from the condition of the fish varying at different times of the seasons. An analysis of a mackerel in a good condition gave:

	In 100 parts.	In 1 lb.
	oz.	gr.
Water	68·7	10 434
Nitrogenous matter.	13·5	2 70
Oil or fat	12·5	2 0
Common salt	2·2	0 154
Phosphates, potash-salts, and other mineral matter . . .	3·1	0 217

Fish, Dried and Salted.—See DRIED AND SALTED FISH.

Fish Esteemed by the Greeks.—So infatuated were many of the Greek epicures with the love of fish, that some of them would have preferred death from indigestion to the relinquishment of the precious dainties with which a few of the species supplied them. Philoxenes of Cythera was one of these. On being informed by his physician that he was going to die of indigestion, on account of the quantity he was consuming of a delicious fish, "Be it so," he calmly observed; "but before I die, let me finish the remainder."

Fish-Hooks, Wounds From.—Persons unskilled in such matters think it proper to wriggle the hook about, and then pull it out as they would from a fish's mouth. This is an unfitting and painful mode of treatment, for the barb of the hook cannot be freed from the flesh without dragging away some of the soft parts in which it is entangled. The readiest and least painful mode of managing this accident is, first to grasp the hook tightly, and, with a sharp knife, rip off the line and clear the stem of the binding silk; then press the blunt end downwards, so that the point should be made to travel onwards till it penetrates the skin and frees the barbed point which is then to be taken hold of, and the hook drawn out through the last-made wound. Rarely any inconvenience, beyond a few hours' smarting, follows the accident if thus managed. A poultice should be applied to the part if painful.

Fish, How to Choose.—The following hints ought to be remembered by all those who are fond of occasionally varying their dietary with a piscine dish:—

(1) Fish shortly before they spawn are, in general, best in condition. When the spawning is just over, they are out of season, and unfit for human food.

(2) When fish is out of season, it has a transparent, bluish tinge, however much fit

may be boiled; when it is in season, its muscles are firm.

(3) As food for invalids, white fish, such as the ling, cod, haddock, coal-fish, and whiting are the best; flat fish, as soles, skate, turbot, and flounders are also good.

(4) Salmon, mackerel, herrings, and trout soon spoil or decompose after they are killed; therefore, to be in perfection, they should be prepared for the table on the day they are caught. With flat fish this is not of such consequence, as they will keep longer. The turbot, for example, is improved by being kept for a day or two.

Fish, Poisonous.—See POISONOUS FISH.

Fish, Salted.—See SALTED FISH.

Fishmongers, Duration of Life in.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Five Senses, The.—See SENSES, THE FIVE.

Flannel Underclothing.—Both old and young should be careful to wear flannel underclothing during the winter months in this climate; and, indeed, no one will do amiss who wears it all the year round. To the minds of some the mere mention of woollen garments suggests a heated and irritable condition. We would, however, impress upon them the fact that wool can be, and is, woven into material of an almost gossamer-like character, as well as into thick mufflers and heavy blankets, and its use can be adapted to all times and seasons.

But it is at night-time that the protective influence of flannel is so valuable. During sleep, the nervous system being quiescent, the circulation slow, the senses numbed and at rest, the body is less liable to resist changes of temperature, chills, and other evils. Then flannel is the best guardian of our health and comfort. Let us add a word on behalf of babies and young children, who

are also unable to resist the external influences of cold. They should always be more warmly clad than adults. The notion that is still held of the possibility of "hardening children" by exposure and cold bathing cannot too soon be abandoned. It is cruel, wrong, and often fatal. John Hunter's rules should be written in every nursery. For rearing children healthily, he says, there must be "plenty of sleep, plenty of milk, and plenty of flannel." Flannel should be frequently changed, particularly if worn at night. When washed, it must be well shaken, and hung up to dry, if possible, in the open air. On no account should it be dried near a fire, as that encourages shrinking.

Hufeland has justly remarked that flannel is a very salutary dress to those who have begun to decline in years; to all cold and phlegmatic temperaments; to all who lead a sedentary life; to individuals subject to cough or frequent colds, gout, diarrhoea, and partial congestions of blood; to all nervous patients, and convalescents from severe chronic disorders; to persons who are too susceptible of the impressions of the atmosphere; and lastly, in such climates and pursuits of life as are exposed to frequent and sudden changes in the weather.

Flannels, Hot.—See APPLICATIONS, HOT.

Flat Bones.—See BONES, CLASSIFICATION OF.

Flatulence (*Low Lat. flatulentus*; from *flatus*, breeze; from *fio*, I blow).—Flatulence, or the undue collection of gas or air in the stomach or bowels, may be brought about in various ways. It may be swallowed, it may be formed from the food, it may be apparently secreted from the walls of the stomach and bowels. It is a common and exceedingly unpleasant symptom of indigestion, sometimes very hard to get rid of. It is also a very troublesome symptom in other diseases affecting the bowels and

abdominal cavity. In a great number of instances flatulence is due to improper food, or the abuse of certain articles of food, especially tea.

Flatulence, Symptoms and Treatment of.—The symptoms produced by flatulence are often exceedingly unpleasant. There may be a feeling of faintness, of giddiness, or of choking, accompanied by most troublesome belching. The gases thus expelled are most frequently tasteless and odourless; and if so, are most probably due either to swallowing of air or to the formation of such simple gases as carbonic acid, or carbonated hydrogen, at the expense of the food. Such turns of flatulence are best treated by dieting, mainly solid food with stale bread, but no vegetables, tea, beer, or pastry. Flatulence may often be only the symptom of dyspepsia; and it is often capable of relief by a slight stimulant, as aromatic spirits of ammonia; but spirituous liquors should be avoided. A little acid or alkali, with a bitter, is often of very great service, and *nux vomica* is an exceedingly valuable remedy in such cases. Occasionally the patient is the subject of horribly nauseous flatulence. He belches up gas of the most horrid odours, disagreeable to himself and every one round him. These gases indicate putrefactive changes in the food, and commonly occur in individuals who have some obstruction preventing the passage of food from the stomach, especially if the obstruction be cancerous in its nature. In cases where there is such obstruction the stomach sometimes expands to an enormous size, and vomiting after food is not unfrequent. In these vomited matters are minute organisms called *sarcinae*, and these are supposed to have much to do with the development of the gas, just as the yeast fungus has in the formation of alcohol from starch and sugar with the evolution of carbonic acid. In all such cases the use of antiseptic remedies to prevent the putrefaction of food is indicated. The two most important forms of antiseptic remedies are carbolic acid and sulphurous

acid. Carbolic acid may be given in the dose of one or two drops in a wineglassful of water, half an hour after food. Its taste is somewhat disagreeable, but it is exceedingly efficacious. Sulphurous acid may be given in the same way, thirty drops of the diluted acid in a wineglassful of water, or it may be given as sulphite or bisulphite of soda.

Flatulent accumulation in the intestines may be due to any of the foregoing causes, but especially to putrefaction in the food, and apparently in certain cases to secretion of gases from the vessels in the walls of the gut. In children the other variety is not uncommon, especially if they have been allowed to suck empty bottles or breasts, their thumbs, or the like; and they are fruitful sources of gripes. Flatus in the intestines often gives rise to very great pain, and the patient urgently demands relief. Perhaps the best remedy in such cases, if it can be borne, is turpentine. It tends, however, to upset the stomach, and so it is better given as an enema. If taken by the mouth, about a drachm should be given for a dose; if as an enema, half an ounce or so, beaten up with an egg in a pint of hot water.

Dr. Radcliffe, who succeeded better by speaking plainly to his patients than some of his successors have by the most subtle politeness, when asked what was *the best remedy for wind in the stomach*, replied, "That which will expel it quickest," inquiring of the ventose subject, whether the wind passed *per ascensum vel per descensum*, observing, that the former is the most aggravated state of *ventriloquism*, the latter a sign that the bowels are recovering their healthful tone.

Flesh-forming Foods.—The substances which lie at the foundation of this group of foods are albumen, fibrine, and casein. These compounds are found nowhere pure, but exist in various forms of vegetable and animal food. The most common form in which the flesh-formers are taken is bread. Bread contains fibrine. The flesh of animals, birds, and fishes also contains fibrine. Albumen is found in the

white of eggs and also in the blood of animals. Casein is found in milk. It is separated with the butter in cheese.

In addition to the flesh-forming principles and fat, animal food contains various other chemical compounds, which are the result of the life of the animal, and act in a beneficent manner on the system. If, for instance, we take the flesh of an animal and squeeze it, we get out a juice called the "juice of meat," and, when evaporated, it is called the "extract of flesh." This compound contains little or no albumen, no fibrine or fat, but it consists of salts and organic substances, resembling in their composition quinine. They are called by such names as *kreatine* and *sarcosine*. When this substance is taken with water, in the form of tea, it increases the appetite, and renders digestible the food that is taken with it.

Flesh, Proud.—See PROUD FLESH.

Floors, Painted.—Floors of wood, painted or stained and varnished, or surfaced with ornamental woods disposed in patterns, with rugs, are more becoming, and certainly more healthful than carpet. Large rugs or movable carpets can be readily lifted for the sake of cleanliness, and, at a moment's notice, to give opportunity for an extemporized dance or a permitted romp of the younger folk. The arabesque patterns and combined and deep-toned colours of the Persian rug are, according to the general idea of the fitness of things, more suitable to be trod on than the bouquets of brilliant flowers and the surface of milk, on which they are seemingly afloat, of many fashionable carpets.

Flour.—Flour is adulterated with various substances, the object being to whiten or otherwise improve it, or to fraudulently increase its weight. Rice meal, bean meal, corn-flour, or Rivett wheat flour and the flour of dari, a sort of millet, have often been discovered in the products of the flour-mill. These materials, however, which are used because they are cheaper

than wheaten flour, cannot be said to be such an objectionable adulteration as those of a mineral character. Amongst the latter are chalk, dolomitic limestone, powdered gypsum, china clay, and even heavy spar or barytes. These are all useless from the food point of view, and some of them are even injurious.

Flour, Adulteration of.—See ADULTERATION OF FLOUR.

Flowers in Sick Room.—A great dread used to prevail with regard to the admission of flowers into the sick-room, lest by their presence the atmosphere should be polluted; but the quantity of carbonic acid given off during the night by the few flowers that one usually finds is so insignificant that it ought not to give rise to the slightest alarm. Moreover, the variety of form and colour which they present are grateful to the eye, and the influence they exert upon many a poor sufferer is often of the most beneficial kind.

Focus, Difference of, in Eyes of Same Person (*Lat. focus*, hearth, fire-place; *Ital. foco*).—This is not uncommon. One eye may be correct and the other long-sighted or short-sighted; they may have different degrees of the same defect, or one eye may be long-sighted and the other short-sighted. Sometimes, when the difference is very great, it is convenient to wear glasses that will adapt one eye to distant vision and the other to near.

Fomentations (*Lat. fomentum*, means of warming; from *foveo*, I keep warm).—Sometimes these applications of moist heat are medicated and rendered more soothing by the addition of opiates, as in the well-known decoction of camomile flowers and poppy-heads; but the principal object for which they are employed is to convey warmth to a part. The best application of this kind is made by wringing flannel—by means of two sticks turned in opposite directions—out of boiling water, and then, shaking it up, applying it lightly

over the part. In this way the heat may be retained for a considerable time. In order to do this thoroughly, two pieces of flannel should be made use of, each of the pieces being about three yards long, and having the ends sewn together, so as to admit of the boiling water being wrung out of them. One of these should always be getting ready while the other is being applied. The coarser the flannel, the more efficiently does it act; owing to its diminished power of conducting heat, warmth is longer retained.

Anodyne Fomentation, No. 1.—Take of poppy-heads, bruised, two ounces; camomile flowers, half an ounce; boiling water, a pint and a half. Boil for fifteen minutes, then strain and apply as a fomentation. When applied to bruised and inflamed surfaces, this forms a grateful, soothing application.

Anodyne Fomentation, No. 2.—Take of mallows, dried, an ounce; camomile flowers, dried, half an ounce; water, a pint. Boil for a quarter of an hour, and strain. This is an emollient application, less soothing, perhaps, than the preceding, but of frequent use.

Food.—Too great attention cannot be paid by those in charge of the sick to the careful regulation of the patient's diet. Badly cooked food is a frequent cause of

indigestion in the healthy, and must on no account be admitted to the sick-room. Again, food must be given at regular intervals, which must be determined by the nature of the case. In some diseases it requires to be given frequently, once every hour or two, but in small quantities at a time. Everything that is intended for the patient's use should be made ready out of his sight, and be brought to him in as neat a form as possible, and with all the dishes scrupulously clean. Large quantities of food should not be brought at one time; the patient is much more likely to be enticed to eat by a smaller amount. Punctuality in bringing patients their food ought also to be attended to; neglect of this may lead to much harm. If a person expects his meals at a certain hour, and has to wait ten minutes or a quarter of an hour for it, it is quite possible that he may be unable to partake of it when brought. Strict quiet should be maintained in the sick-room during meal-times, and the opening and shutting of doors and bustling about the room should be as far as possible avoided.

Food Account.—The following table is an attempt to estimate the quantity of food daily taken into the stomach and changed during twenty-four hours:—

TAKEN IN.			
GASES.			
Oxygen	oz.	24	
LIQUIDS.			
Water—	oz.	gr.	
In beverage	68	0	
In food	25	0	
			93
SOLIDS.			
<i>Flesh-forming—</i>			
Fibrine	3	0	
Albumen	0	300	
Casein in cheese . .	0	137	
<i>Heat-giving—</i>			
Starch	12	0	
Fat and butter . . .	5	0	
Sugar	2	0	
			19
Mineral matters . . .			1
			141

GIVEN OUT.			
GASES.			
Carbonic Acid—	oz.	gr.	oz. gr.
Carbon	11	0	
Oxygen	24	0	
			35 0
LIQUIDS.			
Water—			
By Kidneys	51	0	
Lungs	31	0	
Skin	16	0	
Bowels	5	237	
			103 237
SOLIDS.			
Urea	1	200	
Mineral matter . . .	1	0	
			2 200
			141 0

This table must only be regarded as an estimate. It is drawn up on the supposition that all the food taken in passes into the blood, and is disposed of as indicated by the substances thrown out. The probability is that a large quantity of the matters taken in passes through the bowels without being changed.

Food, Action of Water in.—

See WATER, ACTION OF, IN FOOD.

Food, Adulteration of. — See

ADULTERATION OF FOOD.

Food and Drink during Pregnancy.—

Many women when they become pregnant, forgetting that they have at the same time ceased to be unwell, imagine that the system requires an increased amount of nourishment; and, acting upon this erroneous idea, they overload the stomach and do themselves an injury. If a woman has been careful previous to her marriage in regard to her diet, she will find little to alter now.

The food taken during the early months of pregnancy should be light and wholesome, while being at the same time easy of digestion. Owing to the irritable state of the stomach which prevails at this time, great caution should be exercised in avoiding those things which are likely to disagree—such as pastry, made dishes, etc. Simplicity in diet combined with nutrition should be aimed at rather than a gratification of the palate. The amount of food taken during the early months of pregnancy need not be greater than formerly. In the later months the irritability of the stomach passes away, and the demands of the system become greater; but at this time, owing to the patient being restricted in her exercise, the expenditure of energy is less. The quantity of food taken at any one time should not be increased, but the intervals which elapse between one meal and another may be diminished.

Fish, eggs, chicken, a moderate allowance of meat, light puddings, milk, vegetables, and ripe fruit, are all suitable articles of

diet during the period of pregnancy. Especially towards the close a woman will find stewed prunes and figs, roasted apples, oranges, etc., very wholesome and agreeable; and, in addition, having a gentle laxative effect upon the bowels, they greatly assist in overcoming that tendency to constipation which is frequently so troublesome at this time. If the pregnant female has longings for particular articles of diet, unless these are likely to prove injurious, they may be gratified; but all such longings for what is simply absurd, and could not if gratified prove other than prejudicial, must not be yielded to. A cup of coffee taken in the morning some time before rising will often prove of great use in removing that disagreeable feeling of nausea from which females are so liable to suffer during the early months of pregnancy.

It should be remembered by all that every error in diet which proves hurtful to them is not confined in its effects to themselves, but is shared in equally by the infant in the womb; and if young females desire to be the mothers of strong and healthy children, they must endeavour to avoid everything that is calculated to prevent the attainment of this end.

There is a practice which it is to be regretted is only too prevalent among pregnant women, and that is the indulging in alcoholic drinks and stimulants of various kinds under the impression that their condition demands it. They are under the belief that they will assist in relieving the irritability of stomach from which they suffer during the early months, or the feeling of faintness, debility, and languor that attacks them later on. It may be said, however, that the less the pregnant woman has to do with stimulants of any kind, the better will it be both for herself and her offspring. Many cases indeed might be adduced to show how habits of drinking have been formed in this way, and to prove the injurious influence which this indulgence has upon the children that are born. These matters should receive the careful consideration of every female, and should not be

passed over lightly as if they were too trivial to engage attention.

Food and Feeding.—Nothing is more important to our physical well-being, and consequently to the attainment of long life, than the two evidences of a healthy stomach, which the immortal dramatist has linked together in the oft-quoted saying of Macbeth's,—

“Let good digestion wait on appetite,
And health on both.”

If we consider the amount of ill-temper, despondency, and general unhappiness which arises from want of proper digestion and assimilation of our food, it seems obviously well worth while to put forth every effort, and undergo every sacrifice, for the purpose of avoiding indigestion, with its resulting bodily ills; and yet, year after year, from the cradle to the grave, we all go on violating the plainest and simplest laws of health, at the temptation of cooks, caterers, and confectioners, whose share in shortening the average term of human life is probably nearly equal to that of the combined armies and navies of the world.

Although food comes after air, water, and sleep, as an indispensable condition of existence, that is only because a two weeks' supply of nutriment can often be stored up in the body in the form of fat; and but for this provision of nature, apparently to meet the uncertainties of the chase in savage life, it is probable that mankind must have become extinct by starvation long before the granaries and storehouses of civilized existence were invented to guard against such a catastrophe.

We might just as well look for a locomotive to run without plenty of coal and water, as expect a human body to perform its daily labours, or even to carry on the muscular exertion necessary to propel the blood through its arteries and veins, or inspire the proper amount of air into the lungs, without a due supply of suitable food, properly chewed, swallowed, digested, assimilated, and carried by the blood to

nourish the various organs and tissues of the system, as they hourly wear out and are replaced in the service of the body.

It must be borne in mind that every part of our organism is the subject of continual change. The flesh of a person's arm to-day is not precisely the same flesh as yesterday; some of its molecules have become used up, dissolved and carried away by the blood, and have been cast out of the system through the kidneys or bowels, whilst their places have been supplied by new molecules, formed in that wonderful physiological laboratory, the blood, from the food that has been taken into the stomach. If, now, the stomach or the blood do not do their work properly, or if, doing the best they can, they are not supplied with suitable materials in the food with which they are furnished, the effete molecules of the arm are not fully replaced, and the muscles become flabby, and dwindle away; or, on the other hand, if, by unusually nutritious food and the stimulus of exercise, a greater number of muscle-molecules are elaborated in the blood than are carried away by it in a worn-out condition, growth and development of the arm is the result. And so on with all the different portions of the body.

The overwhelming desire with which nature inspires animals in a wild state for the necessary constituents of their organisms is well shown at the Salt “Licks” of North America, to which deer and other animals resort for hundreds of miles, and in spite of all the dangers which beset them, because they must have salt in their blood. Again, any one who has watched the ravenous avidity with which laying-hens will swallow fragments of egg-shells would wonder at their apparent insanity if they did not remember that they *must* have lime in their blood, to furnish from it the solid coverings of their eggs.

We know well that whole groups of disease, such as scurvy, for example, are caused by the continual deprivation of some simple article of food; and it is highly probable that other common maladies are due to similar, but at present unrecognised, de-

iciencies of our diet in some particular chemical element, perhaps only needed in fractions of a grain. Again, on the other hand, the entrance of extremely minute amounts of certain substances into our food or drink—as, for example, lead or arsenic,—will gradually destroy health, and even destroy life, if long continued.

Another very important office of food, especially the fatty or highly-carbonized articles of the diet, is that of supplying the bodily heat by being slowly burned up within the system exactly as the coal (mineral carbon) is burnt up in fires to warm the dwelling, except that the process of combustion is so managed in the human frame that it goes on slowly, and only a very little at a time, with the result of giving out no light, and but a minute amount of heat.

Food and Study, Antagonism between.—See ANTAGONISM BETWEEN FOOD AND STUDY.

Food and Study for Children.

—In these days, when the schoolmaster is abroad in a sense in which he never was before, a few words may well be added in the interest of young people on the connection between food and study. Study is a consuming of certain materials contained in the brain and the blood; food is one of the means by which this loss is made good and the mind placed in a fit condition to resume work. The system of a child who is studying to excess is becoming exhausted; it loses its power in various directions; the muscular endurance may be enfeebled; the digestion is very apt to fail, and appetite for food is lost with the power to digest food. It is pretty safe to say that a child who eats and sleeps well is not much overdriven. There is a natural antagonism between active study and active digestion. A nourishing meal indisposes a healthy person to active mental exertion; and *vice versa*, active study or mental excitement takes away appetite, or at least enfeebles the digestive

powers for a time. What we say of hard study is equally true of hard play. After hard study or play there should be an interval for relaxation or cooling down before a meal is eaten.

Nothing could be more injudicious than a programme which allows only one hour for dinner, following a forenoon of study, and followed by an afternoon of study. If it be thought desirable for young adults to make the day as full as possible, it will be much better to have an intermission of two hours at noon-time. And persons not adults should always obey a rule which places an hour's interval between dinner and study, and at least half an hour between breakfast or tea and study. All the meals must be nourishing; and stimulants, such as tea, or coffee in particular, should form no part of them.

Study or exercise before breakfast is not generally to be allowed; it will do harm to many children.

Late dinners are apt to interfere with children's sleep. If, for instance, the family meal is from six to seven, and the children go to bed from eight to nine, a hearty, comfortable dinner about noon-time is much better. It is perfectly true that the afternoon studies are likely to be rather sleepy ones; this should induce the judicious teacher to shorten them, and to prefer manual tasks (writing, drawing, etc.), rather than those that call for thought. Afternoon lessons add very little to the child's stock of knowledge.

Food, Elements of.—The ultimate elements of the food that is taken into the stomach are precisely similar to the ultimate elements of the human body. The principal elements which enter into the composition of the human body are carbon, hydrogen, nitrogen, and oxygen. These elements are sometimes called organic elements, because they enter into the composition of all the growing tissues of the animal body. It is principally through the chemical relations of these elements that the functions of the body are carried on. A

human body weighing 154 lbs. is found to contain :—

	lb.	oz.
Oxygen	111	0
Hydrogen	14	0
Carbon	21	0
Nitrogen	3	10

The other elements which enter into the composition of the body are called inorganic elements. They consist of phosphorus, sulphur, fluorine, calcium, sodium, iron, potassium, magnesium, silicium. The compounds containing these elements weigh about 5 lbs. 10 ozs. Many of these contain the organic elements; thus, in the ashes of a human body weighing 154 lbs., there are found 7 lbs. 9 ozs. of ashes which contain mineral compounds. These compounds consist of phosphates, sulphates, carbonates, chlorides, and fluorides of lime, potash, soda, magnesia, and iron.

Food for Infants, Liebig's.—

This popular preparation consists of malt, wheaten flour, milk, bicarbonate of potash. The malt changes the starch to sugar; the bicarbonate of potash aids this change, and neutralizes the acid.

Food, Idiosyncrasies with Regard to.—See IDIOSYNCRASIES WITH REGARD TO FOOD.

Food in Old Age.—The food taken by the aged ought to combine two qualities in an eminent degree. First, it ought to be very nourishing, and secondly, it ought to be easy of digestion. The necessity of relieving the stomach of as much work as possible will be readily apparent from what has been already said. The two qualities of great nourishment and easy digestion will be found in greatest perfection in such food as is more or less fluid. Strong soups, beef-tea, raw eggs, or eggs lightly boiled will be found to answer well. Light puddings, chicken, and the like will be found suitable articles of diet, being both nourishing and easy of digestion. Roast beef, if tender, may also be partaken of; but should be so

sparingly, as butchers' meat of all kinds requires a considerable amount more of active exercise than other kinds of food in order to its thorough digestion. All heavy articles of diet must be avoided. Of this nature are all pastry-stuffs, made dishes, and the like. Great care should thus be exercised in the selection of suitable articles of food; and as the stomach, participating in those changes which are taking place throughout the body, is unable to digest so large quantities as formerly, the amount given at one time must be diminished, and we must endeavour to convey a greater amount of nourishment into the system in a less bulky form.

It may be noticed here that some people have found out through experience that articles of diet which to many prove indigestible agree with them. In such cases it would be unwise to prohibit their use of these things. The man who, during the periods of youth and adult life, has paid any attention to what he has eaten, will be the best judge of what is likely to agree and disagree with him, and should be guided accordingly. He who knows from past experience that a certain article of food will disagree with him, but takes it merely for the gratification of his palate, acts foolishly, and must bear the consequences. Cornaro, in his celebrated treatise on health, speaking of this subject, says that he set about, after recovering from a severe illness, to try the truth of the proverb which says, "Whatever pleases the palate must agree with the stomach and nourish the body." The result of his trial was to prove that the proverb was false; "for though," he says, "rough and very cold wines, as likewise melons and other fruits, salads, fish, pork, tarts, garden-stuff, pastry, and the like, were very pleasing to my palate, they disagreed with my stomach." Let each person, then, find out, by careful attention to this matter, those articles of food which best agree with him, and let him be guided accordingly. Do not overload the stomach, and never allow yourself to be thoroughly satiated. The sign that a man's stomach is acting well is that he is never conscious of its existence. The

moment that a person becomes aware that he or she is possessed of a stomach at all, depend upon it something is wrong. If the aged indulge in heavy meals, they will soon be conscious of feelings of uneasiness in the region of the stomach, which are so many warnings that all is not right, and unless the diet be seen to, and its errors corrected, the uneasiness may increase, and the headache, and furred tongue, and nausea which succeed will show the individual to be suffering from a smart attack of indigestion. It is surely wiser, therefore, to abstain from overloading the stomach than to produce so much wretchedness and misery merely for the sake of gratifying the palate.

Food, Mastication of.—See MASTICATION OF FOOD.

Food of Patient, Observation of.—A few hints as to the kind of things which it is desirable for those who have the care of the sick to observe, cannot fail to be useful to those who have the care of the sick, or in whose dwellings there is illness. Facts with regard to food and sleep are of primary importance as objects of observation. If the patient has been ordered a certain quantity of beef tea at say twelve o'clock in the day, the quantity taken should be carefully noted and reported to the doctor at his visit. There are many nurses who carry food to a patient, and take it away again only half eaten, or, perhaps, scarcely touched, who are nevertheless quite ignorant of the fact, and who, if asked if the patient had taken what was ordered him, would answer that he had. Now, information of this sort is very misleading, and can scarcely be excused, since a little extra care and trouble would suffice to prevent its occurrence. It ought also to be observed whether in eating the patient does so with relish, or whether he rather forces himself to eat against his inclination.

Any article of diet which the patient eats with greater avidity than another, and any peculiar article that he expresses a wish for should also be carefully noted. Much valu-

able information may be obtained from the careful observation of this one point alone, because in certain diseases, especially connected with the nervous system, there is a peculiar craving for strange and altogether unsuitable things as articles of diet. The effect which the food produces upon the patient should also be carefully noted. Is he distressed after eating? Does he complain of fulness or other uncomfortable sensation over the stomach? Or does he remain easy and free from pain? To be correctly informed in regard to these various details would enable the physician to judge more correctly of the patient's condition, and enable him to vary the articles of diet from time to time, as it might be found necessary. When any "fresh" article of diet is employed, its effect upon the patient should be particularly noted.

Food, Portable.—See PORTABLE FOOD.

Food, Quantity of, Needed by Individuals.—See QUANTITY OF FOOD NEEDED BY INDIVIDUALS.

Food Required by Brain-Workers.—See BRAIN-WORKERS, FOOD REQUIRED BY.

Food, Right Quantity and Right Variety of.—The quantity of food taken into the stomach at different meals is a matter of great moment. Speaking generally, the morning meal should comprise one-third of the meat and two-sevenths of the starchy nutriment; dinner should include the remaining two-thirds of the meat and three-sevenths of the starchy materials; and the evening repast consist of the last two-sevenths of the saccharine and starchy matters. By this plan the fatty constituents would be equally divided among the three meals; but this may be varied according to taste. In average health, the amount of food taken into the stomach might safely be left to the control of the appetite, were it not for the machinations of cooks, who

contrive to delude and entrap our natural guide in this vitally important affair into all sorts of immoderate excesses. An excellent rule is always to leave the table with an appetite for food, wholesome food, such as roast beef or bread and butter, without any of the tempting delicacies which too often betray quite as cruelly as did the contents of the Trojan horse in ancient story.

Whilst there are some individuals who, at least in the prime of their lives, are endowed with such ostrich-like stomachs that they can eat immense quantities of unwholesome food with impunity, most adults, and nearly all children and old people, must either be careful of their diet, or be soundly chastised by Nature for their neglect. It is, therefore, very important to discover what articles we should avoid.

Certain varieties of food generally prove injurious, certain others disagreeable only when people who partake of them are not in perfect health, and others still alone cause disturbance in the systems of a few peculiarly constituted individuals. This last class must learn what Nature commands them to do without by practical experience, and these articles of diet, "when found, they should make a note of," and religiously avoid.

Such idiosyncrasies as we often meet with in the matter of diet defy explanation, and probably can be understood only when the mystery of life itself is solved. This applies not only to positive but to negative food, and to all our principal medicines. Even quinine has been known in a few instances to produce a peculiar and disagreeable eruption on the skin. Some cannot bear mutton, others are made ill by a pear, or water-melon, or cucumber.

All these peculiarities are strange enough, but no more strange than other peculiarities of appetite or taste. Why it is that one likes tomatoes, or peaches, or ice-cream, or liver, or melons, or brown bread, and another is indifferent to all these things, or is, perhaps, disgusted at the sight of them, is a problem as unsolvable as the origin of existence.

M. D.

To those who are impatient that such caprices are not explained, the best reply is to say that they are no more mysterious than that we should exist at all.

One thing is clear, that they must, to a certain extent, be abandoned; and those articles that poison any of us must be refused, even though they be food to all others.

There must be variety in our food. The human body is made up of so many different elements, as we have seen, and in different proportions. There exist invariable combinations in every article of food we eat. Some possess elements which are absent in others. Families are very apt to get into a round of food and sameness of preparation, and after a while get tired of everything—have very little inclination to eat at all; but let them go to a neighbour's, or on a visit a few miles away, and the first time they sit down to table they make a tremendous meal. One reason for this is that the food is different, and differently prepared, giving different combinations and different elements, some of which may not have been supplied to the body for weeks together, and which it is languishing for want of.

Few persons, even in the best health, can, without disgust, bear to be confined to a particular food or way of living for any length of time (which is a strong argument that variety of food is natural to mankind); and, if so, the debilitated stomachs of valetudinarians cannot be expected to be less fastidious.

Food, Supply of, How Regulated.—Persons take food very differently, according to age, height, occupation, climate, and season. Children and young persons take more in proportion to their size than adults, as their food supplies the material of growth as well as waste. Persons employed in sedentary and indolent occupations do not require so much food as those who are more actively engaged. Those who live in cold climates consume more heat-giving food than those who reside in warm and tropical climates. The excretion of carbonic

acid is greatly increased in cold weather. Water is also very variously got rid of, by the skin, the kidneys, and the lungs, in proportion as the body is exposed to external heat or cold.

Food, Why Necessary.—It is the waste of the gelatine, fibrine, and albumen in the human body that renders food necessary. They do not, however, waste with equal rapidity. Water passes away most rapidly. It does so by the lungs, the skin, the kidneys, and the bowels. The fibrine and albumen pass away less quickly than water. Then come gelatine and fat. Last, the mineral matters which are employed in constructing the tissues of the body are removed. Calculating the quantity of material removed daily, it would appear that a period of forty days would suffice for removing the whole of the used material of a human body. Consequently, a man should eat and drink a quantity of food equal to the weight of his own body in forty days. The class of foods which supply the waste of the fibrinous, albuminous, and gelatinous tissues are called “flesh-giving.” They all contain also the element nitrogen or azote, hence they are called “nitrogenous or azotised” foods. They do not, however, pass away from the body in the form in which they go in. They are thrown off the body in the form of a substance which is known by the name of urea. This compound appears to be formed in the blood, and is drawn out of it by the kidneys and then passed to the bladder dissolved in the urine. Heat is generated in an animal body by the union of the carbon of the blood with the oxygen of the air. The oxygen is introduced into the blood by the agency of the function of respiration, which consists in the taking into the lungs of oxygen gas, and the returning into the air of carbonic acid gas. The quantity of carbonic acid thrown out is precisely the measure of the quantity of carbon consumed in the food and the oxygen taken from the air. Whilst the oxygen is uniting with the carbon, an

increase of temperature takes place, and the heat of the animal body is thus maintained at a given temperature. This temperature is different in different animals, but in man it is 98° by Fahrenheit’s thermometer. It is quite independent of external temperature, and whether a man is exposed to the heat of the equator, or the cold of the poles, his temperature is the same. The great agent by which this is effected is the skin. The skin is copiously supplied with blood-vessels, which are distributed over its surface and are influenced by the external temperature, so that when the temperature of the air is great the water in the blood is converted into vapour, and so delicate is the operation of this structure that the temperature is always kept at the same point, whether the atmospheric heat is great or small. The food possessing this power of maintaining animal heat and force is sometimes called “heat and force-forming.” It embraces certain substances not existing in the animal body, known by the names of starch and sugar.

Foods, Accessory.—*See* ACCESSORY FOODS.

Foods and their Properties.—Throughout this volume the principal articles of food used by men are considered under their various names, and to these individually the reader is referred. The object in thus dealing with them is to mention their peculiarities and relative value in relation to health. The cook here becomes a physician, and the reader is instructed what to eat and what to avoid. There is no doubt that information is occasionally much needed on both these points, and that better health would be enjoyed by most people if their eating and drinking were preceded by intelligent inquiry as to the nature of the articles of diet of which they are in the habit of partaking. “The question of food,” as is remarked by Dr. Lankester in his Popular Lectures, “lies at the foundation of all other questions. There is no mind, no work, no

health, no life without food; and just as we are fed defectively and improperly, so are our frames developed in a way unfitted to secure that greatest of earthly blessings—a sound mind in a sound body.”

The chemical composition of many of the foods that are passed in review has been derived from Professor Church's work on food—a valuable South Kensington science handbook, prepared at the request of the Committee of Council on Education.

Foods, Auxiliary.—See AUXILIARY FOODS.

Foods, Classification of.—See CLASSIFICATION OF FOODS.

Foods, Flesh - forming.—See FLESH-FORMING FOODS.

Foods, Heat and Force-giving.—See HEAT AND FORCE-GIVING FOODS.

Foods, Medicinal.—See AUXILIARY FOODS.

Foods, Mineral.—See MINERAL FOODS.

Foods, Nutritive Value of.—See NUTRITIVE VALUE OF FOODS.

Foods, Oleaginous.—See OLEAGINOUS FOODS.

Foods, Precedence of, in Digestibility.—See PRECEDENCE OF FOODS IN DIGESTIBILITY.

Foods, Water in.—Water is contained not only in the liquids drunk as beverages, but in all kinds of solid foods. The following is a list of the quantities of water in 100 lbs. of different kinds of food:—

VEGETABLE FOOD.

	lbs.
Fresh Oatmeal	15
Maize Meal	14
Wheaten Flour	14
Barley Meal	14
Peas	14

	lbs.
Haricot Beans	14
Rice	15
Bread	40
Potatoes	75
Grapes	80
Parsnips	81
Beet Root	82
Apples	83
Carrots	89
Cabbages	89
Onions	91
Lettuce	96

ANIMAL FOOD.

Butter	10
Bacon	22
Cheese	34
Eggs	72
Lean of Meat	73
Fowl	73
Fish	74
Milk	86

Foot, The.—The structure of the foot is shown in the accompanying illustrations.



FIG. 1. THE LEFT FOOT. (From above.)

FIG. 2. THE LEFT FOOT. (From below.)

The bones of the foot are twenty-six in number. Where they articulate with

one another they are covered with a tolerably thick layer of elastic cartilage, and by this means, together with the slight movements of which each bone is capable, a high degree of elasticity is given to the foot and consequently to the step. Fig. 1 shows the left foot viewed from above; Fig 2 displays the under surface. *a*, the astragalus; *b*, the os calcis; *c*, *i*, *f*, the tarsus; *g*, the scaphoid; *i*, *g*, *l*, the internal, middle, and external cuneiform; *m*, *m'*, the metatarsus; *n*, *o*, *r*, the toes.

Foot Bath.—When the face is full and flushed and the head feels congested, and apoplexy is threatened, or where apoplexy has already occurred, and a derivative action is wished to be brought about, the foot-bath is generally had recourse to. It acts by causing an increased flow of blood to a part remote from the seat of injury, or from the part where injury is dreaded. In order that this derivative action may be efficient, the water should be as hot as can be borne by the patient, or, at any rate, sufficiently so to redden the skin. The quantity of water employed should be sufficient to come up to the patient's knees when the feet are in the bath. A zinc pail answers very well for the purpose. Frequently mustard is added to the water to increase its derivative effects. Three or four tablespoonfuls of mustard are sufficient for each bath. The feet must be thoroughly dried on coming out of the bath and a warm pair of stockings immediately put on; and after the patient has been placed in bed, hot bottles should be applied to the feet. This bath is also sometimes made use of in cases of difficulty of breathing. In order to promote perspiration, a blanket should be placed over the patient's legs and incircling the bath as well.

Fore Arm.—See RADIUS.

Foul Air in Wells, Tanks, etc.

—See WELLS, TANKS, ETC., FOUL AIR IN.

Fractures (*Lat.* *fractio*, from *fractus*, broken; from *frango*, I break).—Of

fractures we shall say but little, as, in every ascertained case of fracture, as well as in all doubtful cases, the consequences of mismanagement are too obvious and too serious to admit of any conscientious man hesitating for a moment as to the propriety of sending for the most skilful surgeon in the neighbourhood. It may, however, sometimes be highly serviceable that a non-professional person be able to pronounce whether there be fracture or not, as his opinion may decide the question of sending for a surgeon promptly, and it is of considerable consequence that a fracture or a dislocation be speedily reduced before swelling and inflammation are set up. In the following brief articles will be found an enumeration of the most evident proofs of fracture, so that in such cases there will be no difficulty in forming a judgment.

Fractures, Compound.—Those fractures are called “compound” which are accompanied with an external wound communicating with the broken bone; and, in a great proportion of such cases the bone either protrudes through the skin, or lies so near the surface that it may be seen or felt upon an examination of the wound. Such cases, therefore, admit of no doubt as to the existence of the fracture.

Fractures, Simple.—Fractures other than compounds are called “simple,” and the existence of such is not always easy of detection. It is often, however, less difficult to decide that no fracture exists; for instance, if the arm be broken, it hangs down by the side, and the patient has not the power to raise it, and, when it is sought to raise it, considerable pain is given; again, if the thigh bone, or both the bones of the leg, be fractured, he cannot stand upon that limb, or, by any exertion of his own, move it forwards for the purpose of walking. Now we know that other injuries of these parts may produce the same inability of motion, particularly some time after the accident, and we cannot from this alone decide that there is a fracture; but

if, on examination of a case some time after the accident, this inability is found, or if the patient declares that he cannot use the arm or stand upon the leg, which assertion is not unfrequently made to carry on some imposture—if upon minute investigation and by cross-questioning it is discovered that he did walk immediately after the accident, or that he could then raise his arm to his head, it may be safely asserted that there is no fracture. The same observation holds good of dislocation of any of the larger joints. The most decided and only satisfactory positive evidence of simple fracture is the sensation of grating, called technically *crepitus*, which is commonly perceptible not only to the patient himself upon motion of the part, but to another person handling the injured limb. After carefully removing the clothes, then take the extremity of the limb in one hand, and grasp the limb with the other above the injured part, and move both hands in a semi-rotary fashion, or, holding the lower portion of the limb in one hand, press with the finger of the other over the suspected seat of fracture, producing at the same time gentle rotatory motion of the extremity, and the operator will, in almost every case of fracture, feel and often hear the grating of the broken ends of the bone against each other. Sometimes the fracture is detected by a preternatural hollow or depression between the retracted portions of the fractured bone.

Fractures, Treatment of.—The treatment of fractures generally must have special reference to the necessity of keeping the broken ends in contact, and as nearly as possible in their proper relative positions, so that the curative process may proceed without interruption, and, after it is completed, that the symmetry of the limb may be unaltered. A firm bed should be prepared, for which purpose a mattress is the most suitable, or a flat board, sufficiently large, should be placed under the feather bed, in order to render it as firm as possible, and thus prevent the patient from sinking in, which is apt to occur when he is confined long to

one position on a feather bed—a circumstance which materially interferes with the comfort of the patient and the healthy progress of the case.

“The materials necessary for the cure of broken bones are few and simple, and can be provided without difficulty: they consist only of linen bandages, about four fingers in breadth and half a dozen yards in length; of pads, which may be made of three or four layers of rug or blanket tightly quilted together, a pillow filled with tow, cocoa-nut fibres, chaff, or leaves; and of splints, either of deal boards, four fingers wide, quarter inch thick, and of length corresponding to that of the broken limb, or of wheat sheaves, laid side by side, of the same extent and thickness, folded up in cloth and quilted to prevent them moving about, or the fresh bark of trees.”

The pads should be a little longer than the splints, so that they may be twined over each end, and backed so as to prevent them slipping.

Fractures may be treated without splints, as by using starch bandages, or by position simply. The “many-tailed bandage” is made of linen, and consists of a band of linen a yard long, and from two to three inches wide, across which are placed transversely nine or ten pieces of the same width, and of sufficient length for their ends to overlap each other. After surrounding the limb, each piece half covers the one next to it, and they are all sewn at the middle to the long band. To apply this bandage, the limb is to be carefully raised to a sufficient height to pass the bandage under it, the long band being placed in a line corresponding with that of the limb; the ends of the cross-pieces are to be pulled out, and laid smoothly and regularly on the bed; they are then to be turned over the limb alternately from below upwards, one over the other, till the whole limb is completely enveloped. The application of this bandage is much less fatiguing to the patient than that of a roller, and is particularly serviceable when dressings of any kind are required to a wound, as in compound fracture.

Mr. South says: "Broken limbs should not be 'set,' as it is called—that is, bound up with roller splints and pads—for the first three or four days, as for some hours after the accident the part continues to swell. If bandaged up tightly while this is going on, much unnecessary pain is produced, and if the bandages be not slackened, mortification may follow, which I have known to occur. It is best, then, at first, only to lay the broken bone in as comfortable a position as possible, and as nearly as can be in its natural position; and it may be lightly bound to a single splint for the purpose of keeping it steady. The arm, whether broken above or below the elbow, will rest most comfortably upon a pillow, half bent; the thigh or leg will rest most

above all things necessary. The means employed for the reduction of a fracture are chiefly three, and are comprised in extension, counter-extension, and setting. Extension implies the pulling of the broken part in a direction from the trunk of the body, which is fixed by counter-extension in the opposite direction. In making extension, the hand should not grasp the extremity of the broken bone, but should be applied below the joint, and the extension continued steadily and gently till the ends are on a line, and, if possible, one placed against the other. Thus, in a fracture of the thigh, the surgeon grasps the leg below the knee, not the lower part of the thigh. After a bone has been set, it should not be disturbed for some time, and, in general, if left quiet,



FORM OF SPLINT USED IN THE TREATMENT OF FRACTURE OF THE BONES OF THE LEG.

easily upon the outer side, with the knee bent. Broken ribs and broken collar-bones are exceptions to the general rule, and require immediate attention." Many surgeons place the limb in splints as soon as possible. There is always a disposition to spasmodic starting of the broken limb for some time after the accident, which tends to displace the bones and to increase the laceration of the soft parts; this may be prevented in great measure by the early steadying of the whole with splints, which need not be bound tightly, but so applied as to be loosened readily, if needful.

The management of broken bones consists, as it has been said, in putting the displaced extremities in their natural situation, and in retaining them there. The consolidation is the work of nature, and is effected by a process for which a state of perfect rest is

nature will complete the cure; but as there is a tendency to displacement of the bones from muscular action, it is necessary to fix the broken limb so effectually by splints that it may retain its position for the whole time the curative process is going on. Whenever there is a fracture of a lower limb, the patient should lie in bed until the union is complete, and care should be taken that the broken limb bear throughout its whole length equally and perpendicularly upon the surface on which it rests, and not be partially supported only.

It may be observed here that in all cases of accident, where long and constant confinement to bed may be anticipated, the ease and comfort of the patient will be best consulted by laying him upon a hard mattress in preference to a feather bed.

Freckles (*Old Eng.* frecken; *Ger.* flecken, to spot; from *Fleck*, spot).—Freckles are sometimes called *lentigines* (*Lat.* lens, lentis, the lentil), from their resemblance to the lentil in colour, if not in size. This affection usually makes its appearance for the first time in summer, and is always more marked at that season of the year; for this reason it is supposed to be due to the action of the sun's rays, though the precise mode of its causation is not well understood. Freckles are occasionally met with on portions of the body not exposed to the direct action of sunlight. They are small, round, irregularly shaped, or even angularly outlined, yellowish or yellowish-brown flecks, varying in size from the diameter of a small shot to that of a split pea, symmetrically disposed, without regularity of distribution, on the neck, face, backs of the hands and arms, when habitually exposed to the sun's rays. They may appear before the third or fourth year of life, and generally vanish in advanced age. Once having appeared, they last a long time, fading in winter to reappear in summer. Persons of fair complexion are most liable to them, and those having red hair are rarely quite free from freckles; dark-complexioned people are not, however, always exempt. They are attended by no symptoms, and are only annoying by reason of the disfigurement they cause.

Freckles, Removal of.—When there are discoloured marks on the skin, as in freckles, the colour deposit takes place in this deeper layer of the epidermis; hence they are very difficult of removal, because, in order to take away all the colouring matter at once, this portion of the skin would have to be removed down to the papillæ, as in the case of a blister. Now this is painful and troublesome; and, moreover, experience shows that it would be useless to blister off such deformities, because we not unfrequently see blisters on different portions of the body actually followed by staining of the skin where no such staining existed previously. It has been found possible, however, not unfrequently, by proper stimu-

lants to induce an absorption of the pigment, or produce rapid change in the skin, when the new-formed cells will not have the colour.

Freckles, Treatment of.—There is no convenient preventive treatment when a natural predisposition to freckles exists. Such external remedies are of service in diminishing the intensity of the discolouration as act on the epidermis, and thus remove the excess of colouring matter. Among these may be mentioned several preparations of mercury, subnitrate of bismuth, and mild alkaline applications, as solutions of carbonate of soda, or of carbonate of potash. These, variously combined with emulsion of almonds and tincture of benzoin, form agreeable remedies, which should be perseveringly used. Better results are obtained by the prolonged use of mild remedies than by strong applications. Freckles may be rapidly removed by using applications of such strength that their continuous action for some hours gives rise to the formation of minute blisters. The pigment may be carefully removed with the epidermis forming the roof of the blister. The epidermis which re-forms over the surface thus treated will be found to be free from excess of pigment. This process is not to be advised, however, as the benefit is of short duration, and, in unskilful hands, permanent injury to the skin might result. Various ointments are recommended; they contain stimulating substances, and act by exciting a rapid formation of the superficial elements of the skin and their correspondingly rapid shedding (exfoliation), and should only be used under the observation and advice of a competent medical man.

Freckles, Withering's Cosmetic Lotion for.—This preparation for freckles was compounded as follows:—

Take a teacupful of sour milk; scrape into it a quantity of horseradish; let it stand for several hours, then strain well, and apply with a camel's-hair brush two or three times a day.

The following recipes are also said to remove either freckles, tan, or sunburn, and are certainly harmless :—

Dip a bunch of green grapes in a basin of water; sprinkle it with powdered alum and salt mixed; wrap the grapes in paper, and bake them under hot ashes; then express the juice, and wash the face with the liquid, which will usually remove either freckles, tan, or sunburn.

Or, put two spoonfuls of sweet cream into half a pint of new milk; squeeze into it the juice of a lemon, add half a glass of genuine French brandy, a little alum and loaf sugar; boil the whole, skim it well, and when cool it is fit for use.

French Wines.—See WINES OF COMMERCE.

Fresh Air, Vital Importance of.—Ignorance of the fact that air which is not fresh is no better than poison is too common. A painful example of this is given by Mr. George Henry Lewes, in his “Physiology of Common Life.” He refers to a calamity which occurred on board the *Londonderry*, a steamer plying between Liverpool and Sligo. “On Friday, the 2nd of December, 1848,” says Mr. Lewes, “she left for Liverpool with two hundred passengers on board, mostly emigrants. Stormy weather came on, and the captain ordered every one to go below. The cabin for the steerage passengers was only eighteen feet long, eleven feet wide, and seven feet high. Into this small space the passengers were crowded; they would only have suffered inconvenience if the hatches had been left open, but the captain ordered them to be closed, and, for some reason not explained, he ordered a tarpaulin to be thrown over the entrance to the cabin and fastened down. The wretched passengers were now condemned to breathe the same air over and over again. This soon became intolerable. Then occurred a horrible scene of frenzy and violence amid the groans of the expiring and the curses of the more robust: this was stopped only by one of the men

contriving to force his way on deck and alarm the mate, who was called to a fearful spectacle. Seventy-two were already dead, and many were dying; their bodies were convulsed, the blood starting from their eyes, nostrils, and ears.

“The cause of the tragedy was owing to the ignorance of the captain and his mate. They had never learned the vital importance of fresh air. They had never been taught that air which had been once breathed cannot be breathed over again without injury—never been taught the fact that air which has passed to and fro in the lungs is vitiated, and that vitiated air is as bad as poison.”

Fresh Air, when Dangerous.—Paradoxical as it may seem, there are times and situations when a sudden rush of fresh air, or a sudden introduction into fresh air, is far more likely to be attended with danger than a continuance in air that is warm though vitiated, and a caution may well be given in connection with this point. It is less dangerous to faint in an impure warm air than to risk an attack of inflammation of the lungs by a draught of cold pure air. “Fresh air and a glass of spring water,” remarks a medical authority, “are thought of with delight; and yet the latter has killed in an hour, and the former has caused weeks and months of sickness and suffering. They are only good in their place; both are dangerous to one who is in a profuse perspiration.”

Friction (*Lat. frictio*, a rubbing; from *frico*, I rub).—There is no subject to which it is more necessary to call the attention of every individual desirous of preserving health or attaining longevity than to the advantages of friction. The ancients placed so high a value on it that they scarcely passed a day without it, whereas the moderns pay but little attention to this useful practice. Every one knows what currying will do for horses in making them sleek and gay, lively and active, insomuch that it is equivalent to half their food. This it can in no otherwise effect than by aiding

the circulation, and assisting nature to throw off, by perspiration, the grosser parts of the juices, which stop the full and free circulation.

Precisely the same effects will follow the daily use of active friction on the human subject. It has great power in strengthening the digestive organs, promoting a free perspiration, resolving obstructions, loosening contractions, and imparting a comfortable glow and an increase of energy to the whole system. Thus it is uniformly of great service to the gouty and rheumatic, to the paralytic, the weakly, and the nervous; in short, to all persons afflicted with any chronic disease, or suffering under a state of general debility. It is also highly useful in promoting the growth and activity of children, and in preventing those obstructions to which they are liable, and therefore merits the regard of every parent.

Friction may be applied to the body by the hand, or with flannel, rough woollen gloves, or the flesh-brush. The flesh-brush is by far the best mode of applying friction, except where the assistance of aromatics or embrocations is necessary. In cases where the application of cold water, in addition to moderate friction, is recommended, a sponge is sometimes made use of, from its power of absorbing water. But by immersing a flesh-brush in water, the same effect may be better obtained, as the advantages of friction, and the warmth and circulation which it occasions, are then gained at the same time with those of the cold water. This is the best mode of applying cold water to the head in case of giddiness, apoplectic or paralytic affections, headache, etc., in which cases the union of cold water and friction is of inestimable benefit.

The best time for using friction is in the morning and evening, when the stomach is not distended with food, and the proper time for continuing it is from fifteen to thirty minutes at each time. In case of bad swelling, or stiff joints, it is generally necessary to employ it for an hour twice a day.

Frogs.—These are, perhaps, the only

native reptiles which we possess adapted for the purposes of the table. The fleshy part of the leg is a delicate, though not substantial, kind of food. It is eaten by the French, and is said by those who have partaken of it to resemble chicken.

Fruit, Cooking, in Copper Vessels.—See COOKING FRUIT IN COPPER VESSELS.

Fruit Essences, Artificial.—Although there are few instances in which the exact nature of the flavours of fruit is known, yet the discovery has certainly been made in some instances. At all events, many artificial products, chiefly compound ethers, are now known which are very like indeed both in taste and smell to the natural flavours of certain fruits. Amongst the most extensively used of these is the acetate of amyl, derived from vinegar and potato oil by the removal of the elements of water. The artificial essence of Jargonelle pears is a spirituous solution of the acetate of amyl: it is used—and too frequently, it may be added—in flavouring confectionery, especially pear-drops. Other compound ethers give the flavour of other fruits to foods, articles of confectionery, and liqueurs.

Fruits.—The best kinds of fruit are apples, pears, gooseberries, red and white currants, grapes, peaches, apricots, strawberries, and oranges. Of course they are wholesome only when quite ripe, and of apples and pears the more mellow and tender the fruit, the better. Cherries, plums, olives, cucumbers, melons, and all kinds of nuts are, in general, difficult of digestion, and fit only for the strong and active. Black currants have a strong tendency to affect the bowels, and are not wholesome. The fruits classed under the head of small berries—the cranberry, the bilberry, and the red whortleberry—are seldom eaten except when baked, and in that state their use very seldom proves injurious.

Most fruits, especially those which are soft and watery, rapidly undergo decay and

fermentation. The changes which succulent fruits undergo, and the frequent presence in them of much acid or acid salt, render them liable to cause, especially when unripe or over-ripe, diarrhoea and other derangements of the digestive system. Irritation, and even fatal inflammation, of the intestines have resulted from the indigestible skins of certain fruits, such as plums.

The amount of actual nutriment in many of the most delicious fruits and vegetables is exceedingly small, and enormous quantities must be eaten in order to make a meal of them, and of some varieties no amount that can be swallowed will very long satisfy the appetite.

To judge of the value of food by the amount of its nutriment merely is as unscientific and unphilosophical as to judge of the character of men by their weight.

The watery and luscious fruits and vegetables serve not only to quench the thirst, to supply acids, sugar, etc., to the body, but also to stimulate the appetite for other and more substantial food, and to assist its digestion, and very likely to enhance, in ways that are past finding out, its assimilative power.

Fruits do not contain more than five per cent. of solid matter, and very little of the albuminoids; but they contain considerable sugar and acids. They are valuable in diet, also, for their saline ingredients.

Ripe luscious fruits of nearly all the leading varieties can be eaten in their season by those in average health in great quantities, to the full extent of their appetite and between meals, not only without injury, but with very great benefit. To this rule there are individual exceptions.

The proper time, however, for eating fruits of every description is half an hour before breakfast and dinner; and if in their ripe, raw, natural and fresh state, the acid which their juices contain, and which is their healthful quality, is at once absorbed and carried, in its strength, into the circulation.

Fruits, Cooked and Dried.—By cookery, fruit, otherwise unwholesome,

may be converted into a safe and useful aliment. Apples, when baked, afford a pleasant repast; and from their laxative properties are well adapted to certain cases of dyspepsia. Fruit pies, if the pastry be entirely rejected, may be considered valuable articles of diet. Dried fruits are by no means so useful or safe as is generally imagined; the quantity of sugar which enters into their composition disposes them to fermentation. Cooking fruit in brass or copper kettles, although now less common than formerly, before its dangers were properly understood, is still sometimes practised.

Frying.—This is the worst possible mode of cooking meat, especially for persons whose digestive powers are not vigorous, as it almost invariably develops a very acrid substance known as acroleine, and sundry fatty acids that are nearly as unwholesome. Frying, however, will continue to be a favourite mode of cooking for some articles of food, which it renders very savoury, and, if properly performed, not unwholesome. The ordinary mistake in frying is not using fat enough for the process. Every experienced cook is aware that if little only is used, the result is a greasy compound; but if so much that the article to be cooked can be entirely covered with it, it being at the same time in a state of brisk ebullition, the original food retains all its natural flavour without the least smack of oiliness.

Frying, Thomson on.—"The art of frying," says Sir Henry Thomson, "is little understood, and the omelette is almost entirely neglected by our countrymen. The products of our frying-pan are often greasy, and therefore for many persons indigestible, the shallow form of the pan being unsuited for the process of boiling in oil, that is, at a heat of nearly 500° Fabr., that of boiling water being 212°. This high temperature produces results which are equivalent indeed to quick roasting when the article to be cooked is immersed in the boiling fat. Frying, as generally conducted, is rather a com-

bination of broiling, toasting, and scorching, and the use of the deep pan of boiling oil or dripping, which is essential to the right performance of the process, and especially for preventing greasiness, is a rare exception and not the rule in ordinary kitchens. Moreover, few English cooks can make a tolerable omelette; and thus one of the most delicious and nutritious products of culinary art, with the further merit that it can be more rapidly prepared than any other dish, must really at present be regarded as an exotic. Competent instruction at first and a little practice are required, in order to attain a mastery in producing an omelette; but these given, there is no difficulty in turning out a first-rate specimen. The ability to do this may be so useful in the varied circumstances of travel, etc., that no young man destined for foreign service, or even who lives in chambers, should fail to attain the easily acquired art."

Full Diet.—When the term "full diet" is used, it is sought to convey the idea that food of good and thoroughly nutritious properties is supplied in quantity sufficient completely to satisfy the wants of the system. Its quality may be plain and simple, and it may possess no other stimulating property than that which wholesome, well-prepared food never fails to afford to the healthy stomach which is ready to receive it.

Functions of Organs Modified by Brain.—Changes in the quality or amount of the nervous influence transmitted from the brain to any organ have a direct power of modifying its function. If, from a peculiar state of the brain, the nervous influence sent to the stomach be impaired, the tone of that organ will be also impaired, and digestion become imperfect; whereas if, in consequence of pleasing excitement, the nervous stimulus be increased, a corresponding activity will be communicated to the stomach, and digestion will be facilitated, as is experienced after a dinner in pleasant society. But if, by a violent burst of passion, or grief, the brain be inordinately and

disagreeably excited, so as to send forth a stimulus vitiated in quality, the stomach which receives it will partake in the disorder. Hence the sudden loathing and sickness so often induced by unexpected bad news, vexation, or alarm.

Something analogous to this is still more visibly exhibited in the case of the muscles. If the mind be active and decided, the muscles, receiving a strong stimulus, move with readiness and force; but if the cerebral activity be impaired by bilious depression, muscular action becomes slow, infirm, and indolent; whereas if the brain be excited by strong passion, and the stimulus be impetuous, the movements instantly become energetic and decided; and, if the excitement be carried still further, the regulated muscular contraction passes the limits of health, and becomes involuntary and convulsive.

As the quality of the nervous influence depends on the condition of the brain, that which springs from a brain of which all the parts are in sound and vigorous action is the best. Mental indolence and high mental excitement are alike inimical to bodily health; and consequently our great aim ought to be to secure for every mental power, moral as well as intellectual, that equal and regular exercise from which alone the proper nervous stimulus can spring.

It is indeed interesting to observe the various effects of the nervous influence, according to the faculties in predominant action at the time it is produced. If the higher feelings have the ascendancy, and the more selfish propensities be merely active enough to give force to the character, without setting the mind at war with itself, the nervous influence is the most graceful and efficient which can be imagined for sustaining the healthy co-operation of the whole body. This result follows because the Creator evidently designed such a state of mind to be the best and happiest for man himself, and therefore took care to surround him with every motive to induce him to enter into it.

If, however, the lower feelings be in great

activity, and filled with designs and emotions repulsive to the moral sentiments, so that the faculties are ranked in opposition to each other; or if the mind be oppressed with grief, anxiety, or remorse; the stimulus which it communicates is far from beneficial, being no longer in accordance with the conditions designed by the Creator. It is in such circumstances, accordingly, that bad health is so often seen to arise from the state of the mind, and that suffering is produced which no art can relieve till the primary cause has ceased to exist.

Fur in Kettles.—*See SPRING WATER.*

Furniture.—"The furniture of a small house," says Dr. Russell, "ought to be limited to the absolutely necessary, and should not be bulky. Every cubic foot of furniture introduced deducts a cubic foot from the air space. Let its surfaces be hard and impervious. Avoid haircloth in chairs and sofas. Cushions covered with cloth will afford the requisite comfort, and are easily dusted and cleaned.

"Dust and rub carefully all your furniture. Here science steps in with an interesting and curious contribution of fact in support of the seemingly exacting demands of practical sanitarians. Dr. Angus Smith, who knows more about air and the conditions affecting its purity than any other living man, tells us, 'If you wash a table or a chair, or anything in a room, you will find ammonia in the washing; and if you wash your hands, you will find the same; and your paper, your pen, your table-cloth and clothes all show ammonia; and even the glass cover to an ornament has retained some on its surface. . . . This ammonia on the surface is partly the result of the decomposition, continually taking place, of organic matter adhering to everything in dwellings.

"This doctrine is of most importance to the women of our household; and don't let them dismiss it with an incredulous smile because it speaks of that which is only perceptible to the vivid eye of the philosophic

chemist. The greatest triumph of modern surgery, the product of Lister's genius, consists wholly and absolutely of a conflict with that which is imperceptible to the unaided senses—and yet it saves hundreds of lives every year. Let Dr. Smith's curious observation, therefore, give vigour and pith to your arms in your domestic labours."

Furniture and Arrangement of Sick-room.—The best room for a sick person is one on the sunny side of a house, and which has an open fireplace in it. Should there be such a room to which the patient can be removed, the nurse should suggest the change. If the chimney is stopped with a fire-board, newspaper, blower, bunch of straw, or other obstruction, the nurse should at once remove it. The room should be kept bright and cheerful, unless the condition of the patient requires it darkened. Let in the sunlight freely, always shading the patient's face. If the bed faces the window, turn it round, or, better, set up a screen. Bars and streaks of light from ill-fitting blinds are very trying to the eyes. The bed should be pulled out from the wall as far as possible, that the air may have access to it from all sides, and the nurse move easily about it. If the physician prefers a darkened room, the nurse must accustom herself to moving about quietly in it, and let no consideration for her own convenience lead her to object to the order.

Carry out of the room breakable ornaments and anything not needed that will only make a lodging-place for dust. Take away rocking-chairs that persons might be tempted to swing in, and keep everything about the washstand perfectly clean and fresh. If there is no adjoining room or closet in which the nurse can keep the various little matters which she requires in her work, keep them out of sight behind a screen. A common clothes-horse, covered with a quilt or blanket-shawl, makes a screen easily procured. No article of furniture that is not required either by the patient himself or by the attendant should

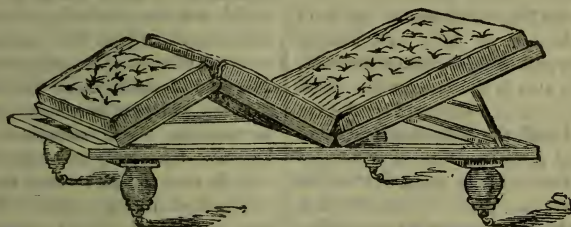
be allowed to remain in the sick-room. If there is sufficient space in the apartment to accommodate two beds, the twenty-four hours can be divided between them, the day being passed in the one and the night in the other.

1. *Bedstead*.—The best and most convenient kind of bedstead for the sick-room is one made of iron, and not standing too high from the ground. Curtains round the bed ought to be dispensed with altogether; in the case of infectious diseases they afford lodgment to the poison, and increase its virulence many-fold. The best kind of mattress is one made of hair, which admits of being frequently pulled out and exposed to the air. A hair or straw pillow is much

kin; an orange, nicely prepared in little sections just large enough for a mouthful, or any other ripe fruit, if the doctor permits it, put over a bowl in which there is ice; a few fresh flowers or a small growing plant may be allowed on a bedside table, but nothing else.

4. *Bed-clothes*.—Patients are apt to be overloaded with blankets, and their breathing, already sufficiently hampered by disease, is still more impeded by the weight that is laid upon their chests.

5. *Pillows*.—In arranging the patient's pillows, care should be taken not to pile them too high and thrust the head forward upon the chest. Frequently this error is committed, and the breathlessness from



USEFUL LOUNGE FOR INVALIDS.

better and cooler for the head than one of feathers.

2. *Bed-rest*.—When the regularly made piece of furniture is not at hand, turn up a high flat-backed chair in such a way that the four feet are in the air, and that it rests on the edge of the seat and top of the back. Slip the back down in the bed, well covered with pillows filled in to the small of the patient's back, and supporting his head and shoulders. When there is a permanently feeble patient a regularly made rest is necessary, which can be lowered or raised, and it should have arms or braces to keep the patient from slipping off at either side.

3. *Bedside Tables*.—A small, light table, with a drawer in it, should be placed for the patient's use. A glass of water or of cracked ice, covered with a saucer or a nap-

kin which he suffers is greatly aggravated in consequence.

6. *Chest of Drawers*.—A chest of drawers should also be in the sick-room. It ought to contain clean towels, old, unsoiled linen (soiled linen should never be allowed to remain about the room), scissors, pieces of tape, pieces of sticking-plaster, and sundry other articles that are likely to be in requisition. Should there not be sufficient accommodation for a sofa, an invalid or reclining chair ought to be provided, and should be so made that the patient can enter it with ease, and have efficient support while in it.

7. *Mirrors, Carpets, and Pictures*.—If a mirror already exist in the room, it had better be removed, or, if allowed to remain, it must be placed so that the patient cannot

see himself in it while lying in bed. Unless the case be one of fever, the carpet need not be removed from the room, if it is already there. The walls also should be hung with pictures; they exert a very beneficial effect upon the patient, and ought always to have a place among the furniture of the sick-room.

Gall-Bladder, The.—This portion of the intestines belongs to the liver, and is attached to the under side of its right lobe. In form and nature it is a membranous bag or receptacle, large enough to contain one or two ounces of fluid, called the gall. It seems to serve as a kind of reservoir to receive the surplus bile from the liver during the intervals of digestion.

Gall - Stones.—Gall-stones, or solid concretions formed of bile, are usually formed in the gall-bladder, but sometimes, though rarely, also in the bile ducts. Most gall-stones are mainly made up of crystalline matter, mixed with the colouring matter of bile, and may grow to very considerable size. When there is only one gall stone in the bladder, it may grow to the size of a hen's egg, which it somewhat resembles in shape. More frequently a number are formed, and then they have facets or smooth surfaces, corresponding to the points where they have come in contact one with another.

Gall-stones are more common in women than in men, perhaps owing to the modes of life differing considerably, for of all inducing causes sedentary occupations and confinements seem to be the most potent. Age also has some effect, for gall-stones are rare in the most active period of life, that is under thirty. Their formation is also associated with a tendency to gout, and may possibly be accounted for in the same way, viz., a sluggish life of over-eating and drinking.

Gall-Stones, Symptoms of.—The symptoms from the passing of a gall stone generally come on quite suddenly,

often two or three hours after food, and the pain is described as a kind of spasm. Its situation is on the right side of the abdomen, just below the false ribs, and generally extends through to the back, near the lower angle of the blade-bone, or between that and the spine. The pain is not constant; it comes by fits and starts, and, while it lasts, is so severe that the patient writhes in agony, or rolls on the floor, pressing his hands on his side, for pressure frequently relieves the pain. This pain is, moreover, attended with a feeling of constriction in the lower part of the chest, which is frequently interpreted as a difficulty in breathing, so that a slight attack may be put down to pleurisy. The fit, as it is called, of gall-stones produces severe exhaustion, the pulse becomes weak, the face pallid, and the whole body is covered with cold sweat. Often the patient questions whether life is worth having on these terms. The pain of irritation in the vicinity of the stomach causes it to contract, and so there is vomiting, which sometimes aggravates, but more frequently relieves, the pain.

It is rare for gall-stones to cause death during their passage through the bile ducts, and in the majority of cases, especially if the period of the passage has been short, as soon as the passage is accomplished, the patient is well, though, if the passage has been long delayed, or gall-stone follows gall-stone, as sometimes happens, the constitution may be greatly shattered. Once in the intestine, as a rule, all danger is past; but if the stone be very large, it may stick in the intestine, and cause obstruction of the bowels, or, if it be very small, it may become fixed in that troublesome spot, the vermiform appendix, and so cause inflammation. Either event is rare. Individuals who have once suffered from gall-stones are unfortunately liable to do so again.

Gall-Stones, Treatment of.—In the treatment of gall-stones the first thing to be done is to relieve the pain and spasm while the stone is passing, and to attempt to get rid of those still left in

the gall-bladder, if any, by dissolving them, and so to prevent new ones forming. For relieving the pain and spasm there is nothing like opium. It is best given by the subcutaneous method. But the sickness is a thing not to be slighted, and so for it we prescribe spirit of chloroform, ice, and the like remedies. Frequently, however, for this purpose large draughts of hot water and carbonate of soda may be given, partially effervescing with tartaric acid, for the effervescence passes off instantaneously, and does much good. The hot water may be repeated as often as necessary. On the other hand, ice is one of the best remedies we can use. But if hot water inside does good, the hot bath sometimes does more, especially accompanied by opiate subcutaneous injections. Thus sleep may often be procured, when such is possible in no other way. Chloral, too, would be well worth trying in good full doses, but meantime our experience with regard to it in these cases is almost *nil*. To get rid of any gall-stones left in the bladder various remedies have been recommended. Chief among these are alkalies and alkaline carbonates, and chloroform or ether. Chief among preventives are air, exercise, and plain food. Stimulants are seldom beneficial. The bowels should be moved daily, if necessary, by Püllna or Friedrichshall water; in the evening a small dose of blue pill may be taken from time to time. If the patient can afford to go abroad, he should try a residence at an appropriate watering-place, such as Vichy, Ems, or Carlsbad.

Galls, Ointment of.—See OINTMENTS.

Game.—See BIRDS AS FOOD.

Ganglia (*Gr.* gang'gion, enlargement in course of nerve).—The ganglia of the special senses develop the powers of sight, smell, taste, etc.; and last of all, the spinal cord seems to be most essentially connected with animal life and particularly with the powers of locomotion, independent of the

conscious mind of the individual, possessing in itself powers of sensation unconnected with the brain. "These powers are exhibited," remarks one writer, "in what are called the 'reflex' nervous actions; that is to say, supposing—as sometimes occurs from injury, or is done for purposes of experiment in animals—the spinal cord is severed at any point, all sensation, all power of the will over the parts of the body below the line of severance is totally lost; but yet, irritation, such as the prick of a pin, to such a part as the foot, will cause the leg to be retracted—evidently showing that the sensation excited by the pin was felt, so to speak, by the spinal cord, through one set of nerve fibres, and 'reflected' from it again through another, causing contraction of the muscles of the limb—independent either of the sense or will of the individual."

Ganglia, Ganglion.—See NERVOUS SYSTEM.

Ganglionic System.—Besides the nervous system described in notices of the CEREBRUM, CEREBELLUM, GANGLIA, NERVES, etc., which see, there is another system that is known as the sympathetic or ganglionic system. It is situated chiefly on the inside of the spinal column, and characterized by the possession of distinct separate ganglia and nerves, which, on the one hand, are connected with the great nervous system, and, on the other, with the viscera of the organic functions.

Gargles (*Lat.* gurgulio, gullet; *Fr.* gargouille, throat; *gargou'illier*, to wash throat).—Gargles are preparations intended for application to the interior of the throat. Their action differs according to the ingredients they contain. They may be employed to soothe an inflamed surface, and exercise an astringent action upon it, or to hasten forward suppuration. They may also be employed to exercise a special influence over the part, as in the case of ulcerated and diphtheritic sore throats. When the inflammation is slight, it is of little conse-

quence whether the gargle be cold or lukewarm; when more severe, it is better to raise it to the temperature of the body. When it is desired to bring about suppuration, it should be employed as warm as can be borne.

Alum Gargle.—Take of powdered alum, a drachm and a half; water, eight ounces. To be used frequently. This is a useful gargle in cases of relaxation of the mucous membrane of the throat and mouth with excessive secretion. The addition of half an ounce of tincture of cayenne renders it more efficacious when the tonsils and uvula are relaxed.

Alum Gargle with Tincture of Myrrh.—Take of powdered alum, eighty grains; tincture of myrrh, half an ounce; water, eight and a half ounces; mix. To be used frequently in cases of ulceration of the mouth.

Catechu and Cayenne Gargle.—Take of tincture of catechu, an ounce; tincture of cayenne, half an ounce; water, six ounces and a half; mix. A tablespoonful in a wineglassful of water every four hours.

Gargle for Thrush (No. 1).—Take of glycerine or borax, an ounce; water, eight ounces; mix, and use frequently.

Gargle for Thrush (No. 2).—Take of borax, two drachms; glycerine, an ounce; mix. Apply to the mouth and tongue by means of a camel's-hair pencil.

Gargle to be used when Acute Stage of Inflammation is Over.—Take of diluted hydrochloric acid, two drachms; barley water, eight ounces; mix, and use frequently.

Gargle to Promote Suppuration.—Take half a pint of compound infusion of linseed, and mix it with an equal quantity of compound barley water. This gargle should be used warm and in large quantities, as warmth favours suppuration. When the abscess has burst, it will be necessary to employ a gargle that will be soothing, and, at the same time, promote healing. For this purpose a little tincture of myrrh (two drachms) may be added to eight ounces of barley water and used as a gargle.

Nitre Gargle.—This is a gargle for simple

inflamed throat. Take of purified nitre, two drachms; barley water, eight ounces; mix. To be used frequently.

Tannin Gargle.—Take of tannic acid, eighty grains; rose-water, eight ounces; mix. Useful in relaxed sore throat.

Garlic.—Garlic is in every part of the plant highly pungent and penetrating. It forms a great article of diet on the Continent, and especially in Italy, whilst in France it is considered an essential in many made dishes. Garlic is, however, too acrid to be used in diet with us in any other form than in small proportions, in the way of a sauce or condiment. Garlic has its acrimony much dissipated by the common culinary



GARLIC.

preparation, which promotes the digestion by the stomach.

Garlic was introduced into England from the shores of the Mediterranean in 1548. It was in greater repute with our ancestors than with us.

It may be said to be a native of Southern Europe, and is nearly related to the onion; its taste, however, is stronger. The bulb consists of ten or twelve parts called cloves.—See also ONION.

Gas, Carbonic Acid, Fatal Properties of.—See CARBONIC ACID GAS, FATAL PROPERTIES OF.

Gas, Ventilation for.—When gas-lights are burning in a small room, or when

there are many people in it, a top exit should be provided for the spent air. This can be done, wherever the chimney draws well, by fixing one of Dr. Arnott's exit valves into the smoke flue, near the ceiling; and its action will be improved by reducing the fireplace opening into the flue, so as to intensify the draught.

Where coal gas is burnt the ventilation ought to be specially perfect, and it should never be burnt where candles and lamps will suffice. The practice of burning gas in bedrooms is particularly objectionable. The great desideratum is the perfection of the electric light. Towards this end science has done her part right well. She waits patiently for the world's practical demand on her resources. Meanwhile, even the model house must be lighted with gas and lamps; with gas as little, with lamps as much as possible.

Gastric Juice (*Gr. gas'ter*, the belly).—This is a fluid secreted from the interior of the stomach, and is the principal agent in digestion. It is a transparent and slightly viscid fluid, which, when obtained from the stomach of an animal while fasting, possesses neither acid nor alkaline reaction, but has a saline taste. During the process of digestion, on the contrary, it is distinctly acid.

Gastric Ulcer (*Lat. ul'cus, ul'ceris*, running sore).—This disease, which may be regarded as simple ulceration of the stomach, occurs most frequently in young persons, especially females of the servant class, though by no means limited to them. Its symptoms are mainly these—pains, vomiting, bleeding; in females, absence of menstruation. There is loss of flesh and pallor of countenance, and finally the ulcer may perforate the wall of the stomach and give rise to general inflammation of the cavity of the abdomen, and so cause death.

Gastric Ulcer, Treatment of.
—To begin with, the simplest and the best, especially when there is bleeding, is ice.

M. D.

The patient may eat it freely, not sucking it only, but champing it and swallowing it in the rough. When there is bleeding, ice should also be kept applied over the pit of the stomach and below the false ribs on the left side. For the pain, which is often very severe, perhaps opium is the best remedy, and it is best given locally, that is by the stomach, in this particular case. The best preparation is the extract made into small pills—the smaller the better, half a grain at a time. If these are rejected, morphia in smaller dose might be tried the same way; if that fail, it must be given subcutaneously. For the pain, when there is no bleeding, bismuth is often one of the best remedies we can give, but it must be in goodly quantity of twenty or thirty grains or more. For the vomiting, ice is the best remedy—and rest. The stomach will not bear food, and so food must be given in the smallest possible quantity and of the most unirritating possible quality. Of all foods perhaps the best is milk; after a time, essence (not extract) of meat is to be given, but not at first. In case of vomiting still continuing, all food must be stopped and nutrient enemata used. When bleeding occurs, the same rules are to be carried out, together with absolute rest. Stimulants are not admissible, except excessively dry iced champagne. Remedies, however, may be given to arrest the bleeding, opium among the number. The most reliable, undoubtedly, is gallic acid, twenty grains for a dose, along with ten drops of dilute sulphuric acid, given in the smallest possible quantity of water which will enable the patient to swallow the mass in comfort. By-and-by, when the patient begins to improve, iron is to be given, but cautiously, beginning with weak non-astringent preparations like the ammonio-citrate or tartrated iron. Infusion of columba, too, is most useful, especially later on, when a few drops of acid can be given with it to aid digestion. Of course such a mode of treatment confines the bowels, and these must be opened, first of all by enemata, later by gentle laxatives, such as compound rhubarb powder or cas-

tor oil. Great care in dieting must be observed long after recovery, for relapse is frequent and dangerous.

Gastritis (*Gr. gas'ter*, the belly; *itis*, termination denoting inflammation).—Gastritis is inflammation of the mucous membrane of the stomach, causing pain of a burning character at the pit of the stomach, vomiting on eating and drinking, and sometimes hiccough. The pulse becomes small and feeble; the patient is pale and faint, with cold extremities and damp skin; the movements of the diaphragm cause pain, and consequently the breathing is short; there is tormenting thirst at times, although the water drunk is vomited at once. The disease may be brought on by taking any substance into the stomach which is in itself poisonous, or becomes so because of the particular conditions under which it is taken, as quantities of cold sour drink taken when the body is very hot and there is perspiration; large amounts or great variety of food taken at one time when the constitution is feeble, or there is convalescence from serious illness, such as typhoid fever, may produce the disease; and it is sometimes brought on by imperfect mastication of harmless food. The doctor should be called on the appearance of the symptoms, and his directions implicitly followed.

Gastritis, Treatment of.—Keep the patient at rest, absolutely, in bed. If cold water can be retained, it is safe to give it as a drink. If enemata are ordered, give them gently, and disturb the patient's position as little as possible. The feeding will sometimes be left to the judgment of the nurse, with the general direction to give food in small quantities; and here the nurse should understand that, when the doctor has done all that he can, the life of the patient will not infrequently depend upon her patience and prudence in administering food.

If there has been vomiting and inability to retain any food, do not offend the weak stomach with the quantity or quality of

what is offered. Confine the diet to milk diluted with lime-water, two tablespoonfuls to a half-pint of milk. This will give all the nourishment you need to begin with.

Give a teaspoonful once in half an hour. If it is kept down for two or three hours, increase the dose to a dessert-spoonful. Gradually increase the dose and lengthen the interval until two tablespoonfuls can be taken every two hours. You will have made a great gain by this time, but do not be in too great a hurry. On the slightest feeling of nausea or belching of wind, omit the dose till the sensation has gone by.

If you can, by slow degrees, after one or two days, bring your patient to take two ounces of milk and lime-water (as above) once in two hours; you may safely continue in this way for several days, feeling sure that he is getting considerable nourishment under the circumstances. It is always better to shorten the interval between the doses than to increase the quantity too suddenly. From milk you may gradually go to thin gruel, made *very smooth*, of rice flour, arrowroot, or corn-starch and milk. Any further change must be made only with the permission of the doctor.

In giving the milk, do so slowly, and do not put more than a teaspoonful into the mouth at one time. If the patient is able to drink from a cup, put the amount for one time into a small wide-lipped one, with a handle, and raise the patient a little by passing your arm under the pillow. When a sick person cannot be lifted, a glass tube is very useful, through which the milk can be sucked. Keep the patient's feet and hands warm, and see to pure air and an even temperature.

Gastrodynia.—See PAIN IN THE STOMACH.

Gelatine (*Lat. gelare*, to congeal; from *gelu*, coldness, as of ice).—This substance is much more conspicuous in the human body than either albumen or fibrine. (See BODY, COMPOUNDS OF.) It constitutes the cement of the bones, and is the sub-

stance out of which the cell walls of all the tissues of the body are formed. Gelatine alone is incapable of supporting the life of an animal; it ought to be regarded as a valuable accessory, rather than as one of the assimilable and necessary articles of food. In the form of calf's-foot jelly it is a favourite article, used among invalids and others. It is used, too, for the thickening of soups. The gelatine so used is commonly called isinglass, and is the sound of sturgeons, dried and cut into shreds. It would hardly deserve notice here, were it not for the sake of warning the public of the want of nutritious qualities which characterizes it. There is no intention to say that it is absolutely innutritious, but it does not contain the amount of nourishment jellies are commonly supposed to possess, and hence people may be cramming the delicate stomachs of invalids with an almost useless material.

Generation, English, March of, through Life.—See MARCH OF ENGLISH GENERATION THROUGH LIFE.

Generous Diet.—A diet is generous when the articles which compose it are not merely rich in nutritious principles, but accompanied with those stimulants which dispose them to provoke the appetite, to call the powers of the stomach into activity, and in some degree hasten the course of the circulation. Diet may therefore be generous without reference to its quantity. Full and generous diets are consequently no more to be confounded than low diet and poor diet.

Gentian Infusion.—See INFUSIONS.

German Wines.—See WINES OF COMMERCE.

Gherkins.—Gherkins are young cucumbers, and the only way in which they are used for cooking purposes is by pickling them. Not having arrived at maturity, they have not, of course, so strongly developed a

flavour as cucumbers, and as a pickle they are very general favourites.

Gin (*Fr.* *genièvre*, juniper, this being used as a flavouring for some kinds of gin).—This is one of the chief varieties of distilled spirits in common use. It is obtained, or at all events ought to be obtained, from the distillation of fermented grain, and is flavoured with the essential oil of juniper berries, or other aromatic substances. For the preparation of this liquor many receipts are in use by the distillers, but the usual plan is to introduce into the still the essential oil (which is often turpentine), the aromatic seeds and fruits, the creosote, and other materials of strong taste which are in vogue, and to distil the spirit once or oftener from that complex mixture. As a test of the wholesomeness of gin, boil down a pint till nothing more can be driven off at the heat of boiling water. The less residue there is left, the more likely is the gin to be wholesome. Gin is sold at different strengths so far as alcohol is concerned—an ordinary strength being 17 under proof. It is often still further reduced by the addition of water, the water used being often unfortunately unwholesome and charged with impurities. Nothing should be used but carefully prepared and filtered water, and this is the case in the best distilleries. "But the distillers are not to blame in most cases for the bad quality of the gin sold in public houses. The retailers, not unfrequently, having lowered the alcoholic strength of the liquor by means of water, restore the fiery character of the spirit by means of natural and artificial preparations of a heating character." "Cordial gin" is gin flavoured with additional spices and essential oils, as cloves, cinnamon, etc. "Sweetened gin" is gin containing sugar.—See also HOLLANDS.

Ginger (*Lat.* *zinziber*, ginger).—The ginger plant, known to naturalists as *Zinziber officinale*, is a native of the East and West Indies. It grows somewhat like the lily of the valley, but its height is about

three feet. The fleshy creeping roots, which form the ginger of commerce, are in a proper state to be dug when the stalks are entirely withered. This operation is usually performed in January and February; and when the roots are taken out of the earth, each one is picked, scraped, separately washed, and afterwards very carefully dried. Ginger is generally considered as less pungent and heating to the system than might be expected from its effects on the organs of taste, and it is frequently used, with con-



GINGER. (*Zingiber officinale*.)

siderable effect, as an anti-spasmodic and carminative.

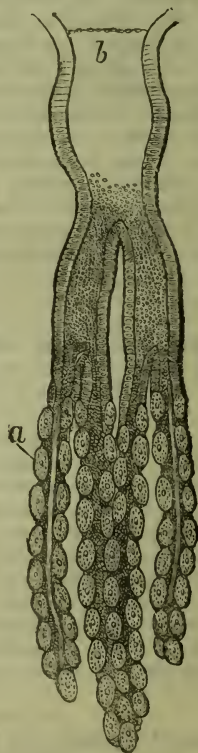
Ginger is frequently adulterated with cayenne pepper, turmeric, and corn meal.

Ginger Beer. — See TEMPERANCE DRINKS.

Girls, Gymnastics for.—See GYM-NASTICS FOR GIRLS.

Giving Medicines. What to be careful about in.—See MEDICINES, WHAT TO BE CAREFUL ABOUT, IN GIVING.

Glands (*Lat. glans, glan'dis, acorn*). —The glands are soft, fleshy, organized parts, having arteries, veins, nerves, and absorbents, and are designed to separate some peculiar fluid from the blood, which is needed for some of the various operations of the system, or is to be rejected from the body. The process by which such fluids are



ONE OF THE GLANDULAR DUCTS OF THE STOMACH WHICH SECRETE THE GASTRIC JUICE,

Showing (a) the clustering vesicles, and (b) the opening or mouth which discharges the secretion into the stomach.

separated from the blood is called *secretion*.

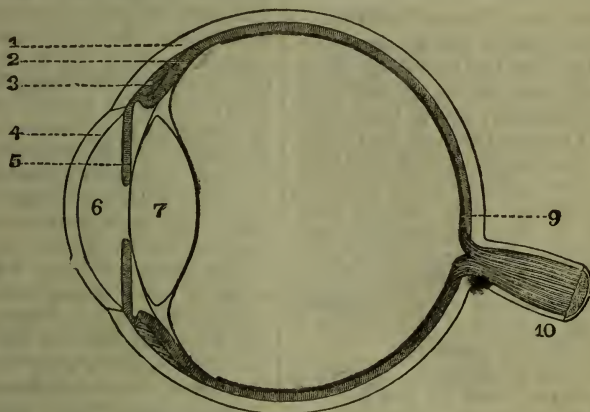
The glands differ greatly both as to size

and shape, and in the character of the fluids they secrete. The largest gland in the body is the *liver*, which secretes the bile. The female breast is also a gland, designed for the secretion of milk. The kidneys also are glands.

Glands and Nervous System.

—Many of the glands, such as the salivary and the pancreas, are only active when certain impressions on the nervous system give rise to a particular condition of the gland, or of its vessels, or of both. Thus the sight or smell, or even the thought of food will

Glaucoma (*Gr.* *glauko'ma*; from *glau'kos*, greyish-blue or sea-green).—This is a disease in which an excess of the fluids of the eye makes the ball tense and hard, and exerts injurious pressure upon its delicate contents. In acute cases it is intensely painful, and rapidly destroys sight by pressure upon the nerve. In its earliest stages its progress can nearly always be checked by an operation which consists in cutting out a piece of the iris; but when the nerve is once paralyzed, the case is hopeless. In no disease are early recognition and treatment more important, and many victims have



VERTICAL SECTION OF THE EYEBALL.

cause a flow of saliva into the mouth; the previous quiescent gland suddenly pouring out its fluid secretion, as a result of a change in the condition of the nervous system.

Glands in Skin.—There are two varieties of glands contained in the skin—the one for the secretion of sweat, called the *sudoriparous*, or sweat glands, and the other for the secretion of an oily or greasy substance, called *sebum*, these latter glands receiving the name of *sebaceous*, or *sebiparous* glands.—See **SEBACEOUS GLANDS AND SUDORIPAROUS GLANDS.**

Glass Pock.—See **CHICKEN POX,**

been condemned to blindness by delay. No one with a violent pain in the eye and head, particularly if it is accompanied by flashes of light, rainbow colours, or dimness of vision, should allow himself to be lulled into a sense of security by calling it neuralgia.

Globe of Eye.—The globe of the eye, as it is usually called, is not exactly spherical, for the clear part of the eye, or cornea, resembles a segment of a lesser circle let into a greater. This will be better understood by looking at the section of the eye in the accompanying engraving. This clear portion of the eye or cornea, as it is termed, forms the anterior fifth of the globe, and is

convex anteriorly, and composed of numerous plates or laminae: it is let into the posterior part of the circle, somewhat like the glass of a watch into the case.

The vertical section of the eyeball shown in the illustration consists of the following parts: 1, sclerotic; 2, choroid; 3, ciliary muscle; 4, cornea; 5, iris; 6, aqueous humour; 7, lens; 8, vitreous humour; 9, retina; 10, optic nerve. The structure of the eyeball and its parts are clearly exhibited in this engraving.

Glottis.—*See* EPIGLOTTIS.

Gluttony and Underfeeding.—

The greatest gluttons may be chronically underfed, for we are told that the Siberians, the Kamtschatkans, and the African tribes and savages generally, who at their feasts appear to be enormous gluttons, go for days at a time without anything to eat; and there are millions and millions who live and die in this world without having known a really substantial and every way healthful meal. Among enlightened nations only a small minority can afford to buy the best of food. The great mass must be content with what they can get, and cooked in a manner at once unscientific and unpalatable.

"Carlyle said to Emerson," remarks an American writer, "that the best thing he ever heard of America was, that there every one could have meat for his dinner—a remark which suggests very painfully the condition of the greater portion of the population of Europe—and yet, of the 40,000,000 inhabitants of the United States, the most favoured nation in the world in regard to food, there are probably not more than one million who can or do systematically live well."

Goat.—The flesh of the goat agrees in its general qualities with other animal food; but it is hard, dry, and strong tasting. It is therefore seldom eaten except when it is very young. The flesh of the kid is occasionally made to pass for lamb, though it is much inferior.

Goethe.—*See* GREAT THINKERS.

Goutre, A Cause of.—*See* SPRING WATER.

Good Filter.—*See* FILTER, A GOOD.

Good Water, Characteristics of.—Speaking of the good and bad qualities of different waters, Professor Church remarks: "A drinking water should be clear and bright. The worst kind of cloudiness it can show is not that of little sandy or chalky grains, but as if half a drop of milk had been dropped into a glass of it; this milkiness is generally a very bad sign. Then water should give, when shaken, bubbles, which rise quickly and break directly; if they move slowly and hang about for some time, the water has organic matter in it, and is, to say the least, suspicious. Again, a good water, whether it be cold or hot, has no smell, unless it be a slight earthy odour, like that of clay on which rain has just fallen. And the best waters keep free from smell when stored in clean cisterns, or kept in covered jugs or bottles. Yet some waters, which in other respects seem sound, do acquire a bad smell on keeping. These are not to be condemned on this score alone, yet it is a suspicious sign. This bad smell comes from the action of decaying vegetable or animal matter (that is, organic matter in a state of change) on the gypsum or similar substances, called sulphates, in the water. A gas—sulphuretted hydrogen—is thus formed, and this gas is not only disagreeable and unwholesome in itself, but it betokens organic matter that may be of a hurtful sort in the water from which it comes.

"Another character belonging to waters is what we name their taste. Of course, if a water tastes nasty it should be avoided, if for no other reason than for these two: (1) a water with a nasty taste is very likely to contain some unwholesome matter dissolved in it; (2) water, like all other parts of our food, should be pleasant, if it is to nourish us as much as it ought. The very purest distilled water is not pleasant or agreeable

in taste, being flat and insipid. The cleanest rain water is not better, nor is boiled water; but where a water is pretty well charged with air, and especially with fixed air, that is, carbonic acid gas, it has a livelier character, which becomes very marked indeed in some natural spring waters, which froth and effervesce like champagne, owing to the escape of some of the excess of carbonic acid gas originally present. But if much of this lively gas be found in a water, it is often accompanied by a large quantity of chalk or earthy matters dissolved by its aid from rocks, etc. Thus, a sparkling, brisk water is often a *hard* one, that is, full of mineral matter; and, moreover, the briskness may mask impurities, and may even in part be due to them.

"Another character of water may be found in its colour. Ordinary wholesome waters are not only clear, so that we can see distinctly through great depths of them, but they have a pure pale-blue tint. The blue of some good deep well waters has a greenish cast in it, but a green, a yellowish green, or a brown colour in a water is not a favourable sign. With the exception of peaty waters, which are yellowish or brownish, and often very deeply stained, and of waters which contain iron, any colour but blue or greenish blue must be taken as a sign of the presence of impurities, which are not unlikely to prove unwholesome at one time or another. The colour of water may be tested in a large white jug filled quite full, or better, in long glass tubes. If a water has a bad colour before it is strained or filtered, it may often be improved, both in look and in reality, by that treatment."

GOOSE.—Of the anserino tribe there is a great variety, and they are all of a highly stimulant and putrescent disposition, being of an amphibious nature, living either by land or water. The tame goose is the one most used. It possesses a strong flavour, and is highly viscous; it is, however, more tender than the wild kind. Hence it affords an aliment which is considered as unwholesome, and the more so when it is fat and

confined without exercise. It is a diet, therefore, not to be used by those who possess a tendency either to inflammation or outaneous diseases.

"A Michaelmas goose," says Dr. Kitchiner, "is as famous in the mouths of the million as the mince-pie at Christmas; yet, for those who eat with delicacy, it is, at that time, too full grown. The true period when the goose is in the highest perfection is when it has just acquired its full growth and not begun to harden. If the March goose is insipid, the Michaelmas goose is rank. The fine time is between both, from the second week in June to the first in September."

GOOSEBERRY.—The gooseberry is a wholesome fruit, especially in a cooked state. It makes a good preserve and a tolerable home wine. The fruit contains about six to eight per cent. of sugar, together with about one and a half per cent. of citric and malic acids. In every hundred parts about eighty-six are water. The skin of the gooseberry is too frequently swallowed. Of gooseberries there are more varieties than of most other fruits, and they differ much in colour, size, and sweetness. When used in a green state for sauces and pies, the gooseberry is cooling, and forms a proper counterpart to animal food.

GOOSEBERRY WINE.—This is reckoned the most powerful of the home-made wines. It should be made before the berries are fully ripe, and should be kept several months after fermentation till it is clear and fine. It then makes a pleasant cooling beverage in summer.

Gossip in Sick-Room.—Nothing is more obnoxious in the sick-room than gossiping friends, and nothing more productive of harm to the patient. They should be excluded from the sick-room altogether, as their presence is unwelcome to every sufferer; and besides being unwelcome, is positively injurious. By the stories which they tell they tend to destroy that

evenness of mind which is so necessary to a patient's recovery, and are apt to diminish his confidence in the physician who is in attendance upon him. If part of the patient's symptoms are cough and pain, they tell him Mr. So-and-so, a very intimate friend of their own, had a cough exactly similar, and suffered from the same excruciating pain, and how by this and that external application, or the employment of some particular drug, they were immediately and completely relieved. Now, all this is most unkind, because both cough and pain are symptoms of so many different diseases, which they, in their ignorance, cannot possibly have any idea of; and, besides, it is very apt to lead to distrust in the patient's mind of the physician who is in attendance, and to neglect in pursuing the line of treatment which he has laid down.

In our care of the sick we ought to do all in our power to prevent the intrusion of any one who is likely to shake a patient's confidence in his medical adviser. "He performs most cures in whom most trust," was the saying of the Father of Medicine, and it is as true of our day as it was of his. All interference, then, with the treatment that is pursued must not be permitted, and any suggestion of this or that remedy by well-meaning but ill-advised friends should be ignored.

How frequently when patients are seriously ill do we hear such people attempting to cheer them by the assurance that there is nothing the matter with them,—as if the patients themselves were not better informed on this point than they. Surely when a patient is dying, and knows that he is, it is little in the way of consolation to be told that he will soon be about again, that he only wants change of air, etc., to put him right. Such false hopes as these a sick man does not want, and it is anything but kindness to trouble him with them. He is not foolish enough to suppose that the opinion formed by such people from a cursory glance can have any weight when placed side by side with the carefully formed opinion of the

physician who has been in constant attendance upon him; but to tell them his reasons for disbelieving what they say would cost an amount of mental and bodily effort which he, in his debilitated state, is ill able to bear. These remarks have, of course, no reference to the *true* friend, whose visit is looked forward to by the sick with unfeigned pleasure, who perhaps remains a shorter time, and during that time says far less than the other, but speaks to the point, and in that kindly, sympathizing way that tells the patient how much he feels for him and with him, and manifests that genuine sorrow in trouble so dear to the afflicted. If after the visit of a friend the patient appears cheerful and soothed, depend upon it such visits will exert a beneficial influence upon him; but should he, instead, appear jaded and fatigued, the influence will be of an opposite kind, and the recurrence of such visits should take place as seldom as possible, if they cannot be altogether obviated. As any mental disturbance may prove injurious to our patient, it is well that his letters should be opened by a trustworthy friend, and only those parts read to him that are likely to exert a beneficial influence upon him.

Gourd.—The gourd is a species of melon which grows to a very large size in the warmer climates. It is generally used by making it into puddings, which are reckoned excellent. It is, however, rather coarse in its texture. The gourd commonly known as the "vegetable marrow" is that which is most generally known and eaten in the United Kingdom. When used in pies, etc., it readily assumes the flavour of the fruit with which it is mixed.

Gout (*Fr.* *goutte*; *Lat.* *gut'ta*, a drop, because originally supposed to arise from settlement of drop of hurtful humour on the part affected).—Great difference of opinion prevails respecting the nature, causes, and treatment of gout, but it is generally admitted to be, in whatever way it shows itself, a disease of the constitution, and when appearing in a regular form, it

must be looked upon as a salutary reaction and evacuation of the system, whereby the equilibrium of the circulation, and a comparatively healthy state of the various functions are, for a time at least, restored. This is the view taken of it by very many of the ablest physicians.

It is correctly divided into three varieties, viz: *acute*, *chronic*, and *retrocedent* Gout.

Gout, Acute, Symptoms of.—

The gout sometimes comes on very suddenly, particularly in its first attacks. In general, however, the inflammation of the joint is preceded by various symptoms indicating a want of vigour in different parts of the body. The patient is incapable of his usual exertions, either of mind or body, becomes languid, listless, and subject to slight feverish attacks, especially in the evenings: he complains of pains in the head, coldness of the feet and hands, impaired appetite, flatulency, heartburn, spasms of the stomach, and the usual symptoms of indigestion. He is oppressed with heaviness after meals, and a disturbed, unrefreshing sleep ensues. The bowels are seldom regular, being either constipated or too much relaxed; the mind at this period being generally irritable, anxious, and alarmed at the least appearance of danger. A deficiency of perspiration in the feet also, with a distended state of their veins; cramps and numbness of the feet and legs, and other strange sensations, often presage the approaching fit. The duration of these symptoms, previous to the fit, is various, sometimes only a day or two, at other times many weeks.

The fit sometimes makes its attack in the evening, more commonly about two or three o'clock in the morning. The patient goes to bed free from pain, and is awakened about this time by a very acute pain, generally in the first joint of the great toe, the pain often resembling that of a dislocated bone, with a sensation as if hot water were poured on the part. It sometimes extends itself over all the bones of the toes and fore part of the foot, resembling

the pain occasioned by the tension or laceration of a membrane. Cold shivering is felt at the commencement of the pain, which is succeeded by heat and other symptoms of fever. The pain and fever increase with much restlessness till about the middle of the succeeding night; after which they gradually abate, and, in the most favourable cases, there is little either of the pain or fever twenty-four hours after their first appearance. The patient, as soon as he obtains some relief from pain, generally falls asleep, a gentle sweat comes on, and the part which the pain occupied becomes red and swollen. In most cases, however, the fit is not over, for the pain and fever return on the succeeding night with less violence, and continue to do so for several nights, becoming less severe till they cease.

Such is a simple fit of *acute* gout. But it often happens that after the pain has abated in one foot, it attacks the other, where it runs the same course; and in those who have laboured under repeated attacks of the disease, the foot first attacked is often seized a second time, as the pain in the other subsides, which is again attacked in its turn, and they are thus alternately affected for a considerable length of time. In other cases it seizes on both feet at the same time. After frequent returns it begins to seize upon the joints of the hand, and at length the larger joints. When the gouty tendency is very great, almost every joint of the body suffers; the pain, when it leaves one, immediately fixing in another.

In strong people the fit is generally finished in about fourteen days. In the aged, and those who have been long subject to the gout, it generally lasts about two months, and in those who are much debilitated, either by age or the long continuance of the disease, till the summer heats set in. In the first attacks the joints soon recover their strength and suppleness; but, after the disease has recurred frequently and the fits are long protracted, they remain weak and stiff, and at length lose all motion.

The above are the symptoms of *acute*, or *regular*, gout.

Gout and Rheumatism, Distinction between.—Gout is distinguished from rheumatism by the previous symptoms of indigestion above noticed, which do not occur in rheumatism; by the pains attacking particularly the smaller joints, while rheumatism occupies the larger: by the deeper redness and greater swelling of the parts affected in gout than in rheumatism, and by the age of the patient, his habit of body and mode of living.

Gout and Wine.—It is quite generally held that gouty patients are injured by sour wines, and this is probably the case in England and America; but on the banks of the Rhine, where the acid wines are made, and where they are drunk by everybody as freely almost as tea or coffee, gout is by no means a prevalent disease.

Gout, Anecdotes Relating to.—A French author, in describing gout, says: "Place your joint in a vice, and screw the vice up till you can endure it no longer: that may represent rheumatism; then give the instrument another twist, and you will obtain a notion of the gout."

A charlatan once presented himself to a great nobleman who suffered cruelly from the gout, and offered an infallible cure. "How did you enter this town?" asked the nobleman. "On foot." "Then be off with you, for if you really possessed such a remedy as you describe, you would long since have ridden in your coach-and-six."

Hildanus tells that a man, disguised as a ghou, took another suffering from severe gout from his bed, and carried him on his back down the stairs, dragging his painful and swollen feet after him, and placed him on the ground. He immediately recovered the use of his limbs, and swiftly ran upstairs under the strongest terror, and never was troubled with the gout again.

Gout, Causes of.—Whatever tends to produce an unhealthy fulness of the blood-vessels, hurt the digestive organs, and impair the vigour of the system, may be

ranked among the causes of gout. Perhaps the principal causes are an indolent and luxurious life, or a sedentary and studious one; hereditary predisposition; anxiety or vexation of mind; excessive evacuations of any kind; cold flatulent diet or immoderate indulgence in acid liquors; the suppression of any accustomed discharge; sudden exposure to cold when the body is heated; wet applied to the feet; costiveness; a variable climate. These may act both as predisposing and exciting causes.

It seems indisputable that the more violent the fit and the longer its continuance, the more the gouty disposition is confirmed, and the oftener the attack is renewed.

A continued imprudence or excess in diet disposes the gout to become chronic, and at last retrocedent, and to attack the stomach in the encrusted, and the head in the corpulent.

Gout, Chronic, Symptoms of.—*Chronic* gout (which is by some physicians called irregular gout) is the disease of a weakly or debilitated constitution. Here the inflammation and pain are more slight, irregular, and wandering than in the acute; there is only faint redness of the affected joint, or no change at all of the natural appearance of the surface; much permanent distension of parts, or continued swelling with impaired moving power; and no critical indications of the disease terminating. The symptoms are always associated with a disordered state of the digestive organs, a languid or oppressed circulation, and much nervous irritation in the system. The patient is distressed with various uneasy sensations in the stomach, as flatulent distension, craving or deficient appetite, heartburn, etc.; the bowels are either costive or too much relaxed; fluttering sensations are often felt about the heart; the painful sensations felt in the affected part are rather those of heat and coldness alternately, than of the more continued *burnings* which take place in the acute form of the disease; the spirits are depressed and the mind very irritable. The subjects of chronic

gout are generally such as have for a considerable time laboured under irregular attacks of the acute form of the disease; this, however, is not universally the case, for in some weakly or enfeebled constitutions the gout soon begins to assume the chronic form.

Gout, Retrocedent, Symptoms of.—*Retrocedent* gout is that form of the disease in which the gouty action is suddenly transferred from the joint, or other external part affected, to some internal organ, as the stomach, intestines, head, etc.

Gout, Treatment of.—As to treatment, much may be done both during an acute attack and during the interval. The remedies may be classified under two headings, specific and common, or ordinary remedies. Of specific medication, we have no better example than the use of colchicum in gout. This remedy, given in full dose, has undoubtedly an extraordinary influence in relieving the gouty paroxysm, but on what principles we cannot tell. Thirty drops of the wine is quite enough for the first dose, and ten drops every four hours after until nausea results, when it should be stopped. This may be done earlier if the pain abates, and under no circumstances should its use be continued over four and twenty hours without intermission. Usually this will stop the attack, but the practice is not without risk, and should not be lightly undertaken.

A still more powerful remedy, though a secret one, is Lavelle's Gout Liquid. Its effects are closely allied to those of colchicum, though its constitution is different. Most likely its efficiency is due to white or green hellebore. It must be used with great caution, and in accordance with the rules laid down for colchicum. Though not without danger, its efficiency is undoubted; yet men who have used it for years almost invariably give it up. Its effects are extreme depression of the heart, with a terrible feeling of sinking and prostration, which are far from pleasant.

From these symptoms the use both of colchicum and Lavelle's Liquid is often interdicted, and recourse must be had to other remedies, which, though less speedy, are more likely to do good in the long run. Chief among these are laxatives, and those are best which best unload the portal system without weakening the patient. For this, gentle saline purgatives are best, say a double salted seidlitz powder to begin with, and a couple of drams of sulphate of soda and sulphate of magnesia, each with a few drops of dilute sulphuric acid, twice or thrice a day. The effervescing form is, however, the best, as agreeing better with the irritable stomach. These remedies must not be allowed to depress the patient, and in some a more comforting draught of senna, rhubarb, aloes and ginger, is to be prepared. Püllna water is a good remedy, but must not be used too freely. One great object is to get the urine to flow freely, and get rid of the half-metamorphosed material in the system. Alkalies do good in both ways; they tend to increase the flow of urine, and they aid metamorphosis. It is best to give the bicarbonate of potash or lithia effervescing with citric or tartaric acid, along with some aromatic spirit of ammonia and tincture of lavender. If the pain is very great, it is hardly possible to refuse opiates, though they are to be avoided as far as possible, seeing that they tend to aggravate the disease by retarding food and tissue change. If opium must be given, then let it be given by the arm, for so less will be required than by the mouth. But before having recourse to that, it is better to try its effects locally. Thus a warm lotion containing acetate of lead and acetate of morphia will often do more good than anything. Extract of belladonna rubbed up with water and glycerine, and applied warm, will often prove of great service. In all cases warmth is the great thing, cold having a tendency to drive the gout to some internal organ. Rest must be absolute and the diet plain.

Sydenham long ago pronounced a fluid, diluting diet the proper one in a fit of the

gout, and such a diet is still recommended by the best informed of the profession. Under very acute symptoms, the nourishment must be wholly fluid, unstimulating, and rather small in quantity, until the severity of the inflammation, etc., has been subdued, and the patient is beginning to recover. The best food for the patient in this stage is bread and milk, light bread puddings, mutton or veal broth, gruel, barley-water, and rennet-why. Roasted apples, grapes, and oranges are likewise generally admissible; and when the patient begins to recover, an egg may be added to the above, with half a glass or a glass of white wine, diluted with water, and sometimes a little bit of chicken or roast mutton for dinner. It should be particularly noticed that even a small excess or impropriety in diet during a gouty paroxysm always materially aggravates and prolongs the attendant sufferings, and sometimes gives rise to severe erysipelas, either in conjunction with the disease, or as an immediate sequel to it.

It may be safely assumed, as a general rule, which is rarely liable to exceptions, that when the patient is strong and full of blood, and the inflammatory symptoms run high, a spare diet, wholly fluid, is highly necessary. When, on the other hand, he has lived freely; when he has long been subject to attacks of gout, especially when these have shown a tendency to become irregular; when the system has fallen into a state of debility, and the inflammatory symptoms do not run high, the diet ought not to be so low, although great caution is still necessary in taking care to increase a little its nourishing qualities without rendering it stimulating.

Ripe oranges and grapes are usually admissible during the fit, but acidulated drinks do not generally agree at that period, and acid matter must be always avoided, in every shape, during the operation of the calomel purgative pill.

Sea bathing is good, so are early hours. The bowels are to be kept open best by Friedrichshall or Püllna water, and the urine must be kept right as far as possible

by alkalies. A visit to a foreign bathing-place, appropriate to the case, is one of the best things we have recourse too. Vichy, Ems, Carlsbad, Wiesbaden, and Aix-la-Chapelle, are the most appropriate resorts.

Several forms of gouty pains, the suffering from concretions about the toe and finger joints, and rheumatic agonies, are often promptly and gratefully relieved, as well as very many other pains, thus: rinse woollen flannels in water as hot as can be borne, wring out, fold up in four or five thicknesses, and lay on the suffering spot; as soon as possible cover over with a dry, folded flannel larger than the damp one, cover all with a piece of oiled silk to keep in the steam and preserve the heat as long as possible; renew every five or ten minutes, according to the intensity of the pain. There should be two or three sets of flannels, so as to have a hot one on the painful spot all the time, without a moment's intermission.

Grapes.—The varieties of this delicious and wholesome fruit are exceedingly numerous; those, however, of a sweet taste and aromatic flavour ought only to be eaten. They are cooling, antiseptic, and nutritious, and when eaten in great quantities they prove diuretic and gently laxative; to have these effects they should be eaten on an empty stomach, or in the morning, and should be always taken without the skin or husks, and also without the seeds or stones, both of which are highly indigestible. When taken in this way, they are the safest and most nutritious of summer fruits. The quality of grapes depends much on the specific nature of the kind of grape, on the climate or soil, and on the different degree of maturation the grape is allowed to receive; from this variety in the nature of the fruit it is found highly useful in a number of diseases, and it has been found especially so in dysentery, in consumption, and in bilious and putrid fever.

Fresh ripe grapes contain a large proportion of sugar, sometimes as much as 20 per cent. The acid of grapes is chiefly tartaric, part of it being combined with potash.

Fresh grapes, of average quality, according to Professor Church, contain:—

	In 100 parts.	In 1 lb.	
		oz.	gr.
Water	80·0	12	350
Albumen	0·7	0	49
Sugar (glucose) . . .	13·0	2	35
Tartaric acid	0·8	0	56
Pectose and gum . . .	3·1	0	217
Cellulose	2·0	0	140
Mineral matter . . .	0·4	0	28

“For 1 part of flesh-formers in grapes there are about 20 parts of heat-givers, reckoned as starch. Grapes are twice as nutritious as gooseberries.” The skins and seeds should be rejected.

Gravel, Symptoms of.—The urinary sand or gravel deposited on the sides or bottom of a receiving vessel is of two kinds, *red* and *white*; and it is of great importance to distinguish the one from the other, as they proceed from different causes, and require a different mode of treatment.

The symptoms of *red* gravel are well known. The shade of colour may vary from a reddish-brown, or pink, to a perfect red. Here the urinary secretion is generally small in quantity and high coloured, and the disease inflammatory: the nearer the deposit approaches to a perfect *red*, the more severe in general are the symptoms.

White gravel is less common, but has long been observed to be attended by very distressing symptoms. They consist in great irritability of the system, and derangement of the digestive organs in general. There is often a sallow, haggard expression of countenance; and, as the disease proceeds, symptoms somewhat analogous to those of diabetes begin to appear, such as great languor and depression of spirits, coldness of the legs, and other symptoms of extreme debility. The urine is invariably pale, and voided in greater quantity than usual; and after standing, for a greater or less time, always deposits a most copious precipitate of white impalpable powder. In all such cases the urine is extremely prone to decomposition, and emits a most disgusting smell.

In many persons there is an hereditary tendency to this complaint; general indolence, or a sedentary life, or an excessive indulgence in fermented liquors and the luxuries of the table, become predisposing causes in others. But the chief cause seems to be a want of constitutional vigour, and especially in the digestive organs; and hence the periods of life in which this disease occurs most frequently are from infancy to the age of puberty, and in declining years; while it is rarely found during the busy and restless term of the prime of life. A cold variable climate often becomes a cause, calculous complaints being seldom met with in warm climates; and the drinking of hard water often influences very sensibly the state of the complaint. *White* gravel may often be very distinctly traced to an injury of the back.

Gravel, Treatment of.—The *red* gravel is by far the most frequent kind of deposit, and the most effectual remedies for it are the alkalies and the alkaline carbonates, such as limewater, the carbonate of potash, or soda and magnesia. But, to be really useful, they must be conjoined with alteratives and aperients; for it ought never to be forgotten, in the treatment of gravel and stone, that they owe their formation chiefly to a weakened and vitiated action of the digestive organs, which will invariably require this conjunction in order to the accomplishment of a permanent beneficial effect.

The diet of persons troubled with *red* gravel should be moderate in quantity and of a nutritious and wholesome quality, consisting principally of fresh animal food and farinaceous vegetables. All acids and acесcent food must be carefully avoided, and likewise heavy bread, fat, and hard-boiled puddings and soups. Soda-water should be the common beverage.

Constant active exercise is of great importance in all gravelly disorders, and flannel should be constantly worn. Sailors and other persons accustomed to constant and laborious exertion in the open air are very rarely affected with these complaints.

In cases of white sand or gravel, an acid is the best medicine, and all the acids seem to answer the purpose, though the muriatic, nitric, and citric acids have been in the greatest repute. The citric acid or lemon juice is preferable for children, as being the pleasantest, and that which may be persevered in for a considerable time; it may be mixed with water in any proportion that is agreeable. The muriatic acid may be given in doses of from five to twenty drops twice or thrice a day, in four tablespoonfuls of water, and the nitric acid in doses of from five to twelve drops in the same proportion of fluid.

The general diet should be nutritious, easy of digestion, and moderate in quantity, and be as largely as possible intermixed with acids, salads, fruits, and especially oranges and lemons. Water saturated with carbonic acid is the best common beverage in this kind of gravel, and, attention being paid to diet and exercise, will sometimes be alone a sufficient remedy.

Whether the gravel be white or not, when a small stone passes from the kidneys into the bladder, there is generally a fit of pain and irritation, to relieve which the warm bath or hot fomentations, together with forty or fifty drops of laudanum every three hours, will be the most proper and effectual remedies. The passing of a small stone from the kidneys to the bladder is denoted by a fixed pain in the region of the affected kidney, with a numbness of the thigh on the same side. The pain is sometimes very acute, and accompanied with nausea and fainting, but the pulse is rarely accelerated. During the whole of the passage from the kidneys, the urine is usually high coloured, and frequently mixed with blood.

Gravel and Exercise, etc.—A striking example of the advantages to be derived from exercise and abstinence, and the mischievous effects of luxuries, has been given in the case of a Dutch merchant. "In the year 1814, this gentleman," says a well-known physician, "was possessed of a considerable fortune, lived in an appropriate

style, and kept a very good table, of which he himself made no sparing use. He was at this time troubled with the gravel. Some political measures unexpectedly took place which caused him the loss of his whole fortune, and obliged him to take refuge in England, where he passed many years in a state bordering upon extreme distress, which compelled him to submit to numberless privations; but his gravel disappeared. By degrees he succeeded in re-establishing affairs; he resumed his old habits, and the gravel very shortly began to return. A second reverse occasioned him once more the loss of all he had acquired. He went to France, almost without the means of subsistence, where, his diet being in proportion to his exhausted resources, the gravel again, a second time, vanished. Again his industry restored him to comfortable circumstances; again he indulged in the pleasures of the table, and had to pay the tax of his old complaint."

Great Thinkers, Liberal Feeders.—The great majority of the leading thinkers and actors of the world—the philosophers, writers, orators, legislators, warriors, inventors, and creators of new eras in every department of human thought—have fed their brains with a greater or less abundance and variety of animal as well as vegetable food. We have, in biography and general observation, sufficient data from which to form a satisfactory and reliable opinion.

Goethe was a vigorous performer at the table, and even to an active old age retained his fondness for good dishes. Says Lewes, his biographer, "His appetite was immense. Even in the days when he complained of not being hungry, he ate much more than most men. Puddings, sweets, and cakes were always welcome. He was fond of his wine, and drank daily his two or three bottles. On this diet, and amid great literary activity, prolonged to extreme old age, he lived to see his eighty-third year."

Of Peter the Great, Marmontel says that "he dined at eleven o'clock and supped at eight: an astonishing eater and drinker—

two bottles of beer, the same quantity of wine, half a bottle, and sometimes a whole one, of brandy, at each of his meals were scarcely sufficient for him, without reckoning the liquors and refreshments that he swallowed in the intervals."

Green Sickness.—See CHLOROSIS.

Grey, Hair Turning to, in Single Night.—See HAIR, RAPID CHANGE OF COLOUR IN.

Grief.—This passion, in its general feeling and effect, may be styled the slow poison that corrodes the mind, and, in the language of Scripture, "the worm that gnaws within"; the body becomes gradually enfeebled by its suffering; the circulation, rendered slow, allows accumulation and obstruction of some of the organs to take place; the stomach and bowels no longer perform their functions with activity. Actual disease then intervenes. The nervous system, under its powerful sensations, occasions a peevishness and irritability of temper, and, occupied solely with his own ungrateful feelings, the unhappy individual falls a prey to melancholy, and in time, in common language, dies of a broken heart.

Grief has a very marked influence over the circulation, probably by its direct action on the heart, which may be so violently affected as really to break, not metaphorically, but physically. Prolonged distress of mind invariably produces a great preponderance of the venous over the arterial blood; hence there arises a general feebleness. We are assured, on the testimony of their medical attendants, that convicts frequently die of broken hearts, and it requires more than ordinary care and skill to restore them to any degree of health if once attacked by illness, as the absence of hope, especially among those transported for life, causes them to sink rapidly, whatever be the disease. They seldom recover, or, if partially restored, it is only to relapse from the slightest circumstances, and such as would not in the least affect persons enjoying liberty and hope.

Grief, Bodily Effects of.—Persons suffering from excessive grief often seek relief by violent and almost frantic movements, but when their suffering is somewhat mitigated, yet prolonged, they no longer wish for action, but remain motionless and passive, or may occasionally rock themselves to and fro. The circulation becomes languid, the face pale, the muscles flaccid; the eyelids droop; the lips, cheeks, and lower jaw all sink downwards from their own weight. Hence all the features are lengthened, and the face of a person who hears bad news is said to fall.

Grief, Bodily Treatment of.—The discharge of the skin, in cases of severe grief, should be promoted by friction and the warm bath, and a dry, warm, and temperate climate should be the situation chosen for a residence. Weeping is generally the termination of a violent paroxysm of grief, and should be considered as giving relief, and as a useful palliative remedy.

Indolence and solitude are ever the supporters and nourishers of grief. Occupation and society are therefore its chief remedies. In this point music will prove a useful lenitive. According to the poet—

There is a charm, a power that sways the breast,
Bids every passion revel or be still;
Inspires with rage, or all your cares dissolves,
Can soothe distraction and almost despair.

That power is music.—See MUSIC FOR MEDICINE; MUSIC, EFFECT OF, ON MIND.

Grinder's Asthma.—In grinder's asthma, there is first an irritant, barking, dry cough, with a scanty expectoration of white stringy mucus, from simple irritation of the interior of the lungs. This trouble increases in time, and the man becomes weaker, loses his breath easily, and breathes with less vigour; he perhaps begins to spit a little blood. If he leaves his dangerous trade at this point, he will probably recover; if not, he passes into a third stage where the tissue of the lung breaks down in spots, and is expectorated, leaving cavities; he then suffers from the usual symptoms of

consumption, viz., hectic fever, night sweats, loss of sleep, emaciation, and great difficulty in breathing.

It is fortunately the case that great relief can be given by mechanical appliances for carrying off the dust formed in the process of grinding. The stone is boxed in and connected with a flue, which rapidly exhausts the air and its dusty contents from the surface of the stone. Several stones can be connected with one common flue in this way. The draught is produced by a fan driven by a small engine of eight or ten horse-power.

Articles which can be ground wet, as knife-blades, scissors, etc., do not produce this trouble to such an extent; but the artisan is liable to rheumatism and pneumonia from the wetting of his clothes.

Certain articles must be ground dry, owing to the necessity of carefully avoiding rust in the finishing process, as in the case of pins and needles. The more extended use of machinery, however, in grinding has of late done away with most of the injury from this form of dust.

Grit Gruel.—Wash the grits in cold water, after which the fluid should be poured off and fresh cold water added. Boil them slowly, until the water last added is reduced one-half, after which strain through a sieve. Allow about one ounce and a half of grits to make one pint of gruel.

Grotta del Cane.—See CARBONIC ACID GAS, FATAL PROPERTIES OF.

Ground Rice Milk.—Take a table-spoonful of ground rice, mix well with a pint and a half of milk, add half an ounce of candied lemon-peel cut into slices, and boil for half an hour; strain while hot. This forms a very nice nutritious article of diet for acute disease and early convalescence.

Grouse.—Grouse, or moor game, is a bird found chiefly in North Britain, and whose food is heather. Its chief qualities

differ little from the other species of game, being dry and high flavoured.

Growth of Hair after Death.—*See* HAIR, GROWTH OF, AFTER DEATH.

Growth of Man.—Observations regarding the growth of man have determined the following interesting facts:—The most rapid growth takes place immediately after birth, the growth of an infant during the first year of its existence being about eight inches. The ratio of increase gradually decreases until the age of three years is reached, at which time the height attained is said to be half that which it is to become at full growth. After five years the succeeding increase is very regular till the sixteenth year, being at the rate, for the average man, of two inches a year. Beyond sixteen the growth is feeble, being, for the following two years, about six-tenths of an inch a year; while from eighteen to twenty the increase in height is seldom over one inch. At the age of twenty-five the growth ceases, save in a few exceptional cases.

Gruel.—This is a boiled infusion of the flour of some of the farinaceous seeds or grains, most commonly oatmeal, which, with the addition of butter and sugar, forms a palatable dish for invalids. When made very thin, it is used as a drink, and may be considered as a useful dilutent, the farinaceous mixture rendering it digestible, and allowing it to pass into the circulation.

Gruel made with oatmeal is well calculated for the supper of all persons, and particularly for the delicate, when it does not become aced on the stomach. It may be taken with or without milk, and with salt or sugar. Nutmeg, or some other spice, should in general be grated into it when it acidulates on the stomach. It may often be taken without producing any such unpleasant effect, if made partly with good beer, instead of wholly with water.

Dr. Franklin's favourite breakfast was a good basin of warm gruel, in which was a small slice of butter with toasted bread and

nutmeg. The expense of this he reckoned at three-halfpence.

Gudgeon.—This is a species of fish, coarse in its texture, and little used as food except among the lower orders.

Guinea Fowl.—This bird takes its name from Guinea in Africa, where it is found wild and in great abundance. The hen lays abundantly, and the eggs are excellent. In their flesh, however, they are not so white as the common fowl, but more inclined to the colour of the pheasant, for which it frequently makes a good substitute at table. The flesh is savoury and easy of digestion, and is in season when game is out of season.

Gull, Sir William, on Intemperance.—See *INTEMPERANCE, GULL, SIR WILLIAM, ON.*

Gum.—The gum is a thin, compact, tough, elastic, fibrous tissue, enveloping the alveolar processes, and surrounding the teeth at their necks. It is continuous with the mucous membrane which lines the inside of the lips and cheeks, and the floor and roof of the mouth, and, at the necks of the teeth, with the membrane (called the *pericementum*) which lines their sockets, and also invests their roots. In a healthy condition the gum has comparatively little sensibility, bearing without irritation the friction to which it is subjected in mastication. This insensibility is also evidenced by the immunity from pain when the gums are used in chewing by the child before the eruption of teeth, and by those who have suffered the loss of their teeth.

Gum Arabic, Emulsion of.—See *EMULSIONS.*

Gum - Boil.—See *BOILS ON THE GUMS.*

Gums, Lancing.—See *TEETHING, OR DENTITION, DIFFICULT.*

M. D.

Gunshot Wounds.—Gunshot wounds are a species of accident too formidable to be treated of in a popular work like the present. They uniformly demand the skill of an able and scientific professional man; and we shall dismiss the subject with this single observation—if attended with profuse bleeding, apply a tight ligature above the wound, or a series of compresses and a firm bandage over the wound; and if, as is much more commonly the case in gunshot wounds, there is no bleeding, envelop the whole wounded part in a bread-and-water poultice, renewing it every two or three hours till the arrival of the surgeon.

Gymnastic Exercises (*Gr. gumnas'tikos*; from *gum'nos*, naked, because the athletes of ancient times contended without clothing).—Physical education has, to a very great extent, been left, in this country, to take care of itself.—We are no worshippers of the system which would subordinate mind to matter, which would make a well-trained boating-man or cricketer the most perfect being on earth; but assuredly we do not hold to the other view, that men may grow up misshapen, rickety articles, provided only their mental powers are developed to the uttermost. Strength of body is necessary to strength of mind, and most men of great mental vigour, not necessarily of subtlety and refinement, are also men of bodily vigour. Here it may be as well to say that physical education does not mean what is sometimes described as "hardening" children. You see a miserable little wretch, shivering in the cold of winter, only half dressed, and you are told by his parents they are hardening him. Well, it is true the result may be satisfactory, but it may not; some live and do well, but a good many die in the process. Physical education means taking the material you have got, however unpromising, and making the best of it. To do so, you require good food and clothing, air and exercise, and the cleanliness which comes after godliness.

In physical education, the object aimed at is the exercise of all the muscles of the

body, none assuming an undue preponderance over others. The foundation of all physical training is, that a part grows by exercising it. The more it is wanted to do, within due limits, and provided due nourishment be supplied, the more it will be able to do. It grows by exercise; now the part of exercise which seems to do most good is motion. Suppose you move your arms backwards and forwards a score of times, this will do the muscles more good than moving backwards and forwards, under greater difficulties, ten times; which leads us to the conclusion, that for training purposes, especially among children, apparatus is of little value, save as a means of directing movements.

In the selection of exercises, those who take to them should not be misled by a vain desire of surmounting difficulties and performing feats at the serious risk of inducing aneurism or rupture, but rather endeavour to strengthen the body by active amusements which shall call the social and moral feelings and intellect into play at the same time, and by the practice of such gymnastic evolutions only as tend to improve and give tone to the *natural* action of the moving powers. And in endeavouring to attain this object, we should be always careful to avoid great fatigue, and to modify the kind, degree, and duration of the exercise, so as to produce the desired results of *increased nutrition and strength*; and to remember that the point at which these results are to be obtained is not the same in any two individuals, and can be discovered only by experience and careful observation.

The best guide we can have is to follow the footsteps of Nature, and, before adopting any exercise to consider whether it is in harmony with the mode of action assigned by the Creator to the parts which are to perform it. If it be so, we may proceed with perfect confidence that it will not only improve the health, but add to the freedom, elegance, precision, and strength of our movements; whereas if it be opposed to the obvious intention of the Creator, we may rest assured that no good can accrue from it.

If, for example, we examine the various attitudes and motions of the body which occur in fencing, dancing, swimming, shuttlecock playing, and some of the better class of gymnastic exercises, we find that they are not less graceful and beneficial to the young who engage in them than pleasing to those by whom they are witnessed—just because they are in perfect harmony with Nature, or, in other words, with the structure and mode of action of the joints, ligaments, and muscles by which they are executed. But it is far otherwise with some of the anomalous exercises which are not uncommon in schools and gymnasia, and which seem to have for their chief object the conversion of future men and women into foresters, firemen, or savages, rather than into beings who are to continue to have the use of stairs, ladders, carriages, steam-boats, and the other conveniences of civilized life.

For giving strength to the chest, fencing is a good exercise, and the same is to be said of the Indian club exercise. Shuttlecock, as an exercise which calls into play the muscles of the trunk, chest, and arms, is also very beneficial. After a little practice it can be played with the left as easily as with the right hand, and is, therefore, very useful in preventing curvature and giving vigour to the spine in young women. It is an excellent plan to play with a battledore in each hand, and to strike with them alternately. Lawn-tennis and badminton, to speak of more elaborate games, deserve also the highest praise on the score of health, and it is to be hoped that they will enjoy a long-lived popularity. The now declining croquet might also well be granted a new lease of life. The game called *La Grace* is another sport well adapted for expanding the chest and giving strength to the muscles of the back.

Gymnastics for Girls.—The mistake which sadly diminishes the benefit of gymnastics for girls is that they are generally performed in a close room, or, at best, one wherein the windows are opened for a

few minutes only at a time; and statistics show that persons who sit still in the open air, such as street sellers, enjoy better health, as a class, than those who take plenty of exercise in the house. By some additional trouble and expense ~~this~~ drawback could usually be avoided, as we trust will soon be the case in all well-conducted schools.

In these days, when so many women are engaging in intellectual pursuits of a high character, and even are desirous of competing with men in the cares and anxieties of professional life, the question of their physical training ought to receive more attention than it has hitherto done. In this respect girls stand at a great disadvantage as compared with boys. Up to a certain age, say eight or nine, a girl mixes often on equal terms with her brothers in their sports; indeed not infrequently excels them both in skill and spirit; but after that age healthy exercise is sacrificed to the bondage of genteel deportment. The growing child is confined with stays, and her feet crippled with tight boots. Anything like vigorous muscular movements are thus rendered impossible, and the sole exercise is the torpid walk. Owing to this want of functional activity of the muscular system the muscles waste and dwindle, and the nutrition of the body becomes impaired. Many of the troubles women suffer from in later life are undoubtedly due to impaired muscular vigour, and much suffering would be spared if proper attention were paid in early life to their physical development by a course of systematic training. We do not mean that our daughters should emulate their brothers in the cricket-field, or that female athleticism should become the vogue. But we would point out to parents and managers of schools the danger entailed by the present neglect of exercise, and indicate the games that could be most easily adopted. Thus fives, rackets, and lawn tennis are games for which no great space is required; the latter game might be taught systematically, just as cricket is to boys at public schools. To play these games with safety, however, stays and tight boots must be alto-

gether discarded. Swimming, too, ought to be taught at all girls' schools, not merely because of the protection it affords, but also from its being in itself an admirable exercise, bringing into play all the muscles of the body.

Bodily exercise, as well as mental exertion, should be regulated with especial care in young girls about the epoch of puberty, since the changes of the constitution at that momentous period often render ordinary rules and habits useless or even dangerous. In cases of doubt, medical advice should always be summoned in order to avoid laying the foundation of lifelong imperfections of development as a consequence of temporary over-study or over-work. The same caution is applicable in regard to boys, but to a less extent.

Habits in Old Age.—At this period of life habits of regularity should be attended to more than ever. Every meal should have its appointed time, which ought to be strictly adhered to. The hour for retiring to rest should be as seldom as possible interfered with, and the habit of sitting up late is to be avoided. Those who are up in years should retire to rest early. Sitting up in close and stuffy rooms—rooms overheated and badly ventilated—will be a fruitful source of mischief to the aged. No food should be taken an hour or so before retiring to rest, and the last meal of the day should always be light. Milk and bread, arrowroot, and the like, will be found suitable articles of diet at this meal.

Haddock.—The haddock much resembles the whiting, but is firmer in texture, and not so delicate in flavour. It is certainly better when it does not exceed a middling size. The haddock caught on the Scotch coast are perhaps the best of their kind, and the Finnan haddock, when dried and smoked, is reckoned a great delicacy. It should be served up over boiling water, in order to keep it hot as long as possible, as it soon gets cold after it has been cooked.

Hæmogastric Fever.—See YELLOW FEVER.

Hæmorrhage, How to Arrest (*Gr. hæma, blood; rhēgnūmal, I flow forth*).—There are three methods of stopping bleeding, with which every one should be familiar:—

1. Pressure at the bleeding point. Blood may often be seen to flow from one small point only of a wound; slight pressure with one finger, or the ball of the thumb, over the spot, will usually stop it as long as the pressure is kept up, and often altogether, even after the pressure is removed.

2. Pressure on the main artery supplying the wound. To be able to make this pressure on the exact spot requires a knowledge of the distribution of the main arteries of the body. Where this is wanting, you may apply a roller bandage, as tightly as possible, around the limb above the wound; this pressure must not be kept up very long, as mortification may be produced by it.

3. The application of cold. This plan answers best when the bleeding is from several points scattered over a large surface; it is conveniently applied by letting cold water drip from a sponge on to the bleeding surface, or by the application of ice.

The part from which the blood comes should be raised above the rest of the body, and if the patient become faint, he should not be roused immediately, since faintness acts as nature's remedy by lessening the force and activity of the flow of blood. There is a useful medium for staunching the flow of blood known as Rubini's Styptic. All chemists are acquainted with it, and most of them keep it. It is serviceable in cases of internal as well as external hæmorrhage.

Hæmorrhoids.—See PILES.

Hair.—The hairs, and the nails also, are simply portions of the epidermis, or outer layer of the skin, altered in shape and structure to fulfil the ends assigned them. But the hairs are situated much more deeply

than one might infer from this statement, and the longest and largest of them reach down through the entire thickness of the true skin, or derma; though the finest downy hairs called *lanugo* are very superficially inserted.

Almost the entire surface of the body is provided with hairs of some sort, with a few exceptions, as the palms of the hands and the soles of the feet, though over some portions of surface they are so fine as to be hardly discernible with the naked eye.

Hair, Diameter of.—The size or diameter of the hair is by no means uniform. Few, if any, hairs are ever round. Dr. E. Wilson has measured a large number of hairs, and found the diameters to vary from $\frac{1}{1600}$ to $\frac{1}{16}$ of an inch. The common diameter of the average hair is about $\frac{1}{120}$ of an inch, that is, four hundred and fifty laid side by side would form a band an inch wide. Darker hair is more apt to be coarse than that which is lighter, though black hair is sometimes exceedingly fine and silky. Wilson states that his examinations show that the coarsest hair was found in females and the finest in males; and in children the diameter of the hair is still finer.

Hair Follicle.—See HAIR, PARTS OF A.

Hair, Growth of, after Death.—A prevalent belief, strengthened by the opinion of several modern French writers on this subject, is, that the hairs grow after death. It is true that they lengthen, but their lengthening results from the contraction of the skin towards their roots, and not from the continuance of a vital process after the death of the individual. But the older writers outstrip the moderns in invention; for Wulferus gives the "account of a woman buried at Nuremberg, whose grave being opened forty-three years after her death, there was hair found issuing forth plentifully through the clefts of the coffin, inso-much that there was some reason to imagine the coffin had some time been covered all

over with hair." And Mr. Arnold gives "the relation of a man hanged for theft, who in a little time, while he yet hung upon the gallows, had his body strangely covered over with hair."

Hair, Length of.—Hairs vary very greatly on the different parts of the body both as to length and size, from the finest *lanugo*, or short downy hair of the face, to the long hair of women. Dr. Erasmus Wilson mentions a lady whose longest hairs measured seventy-five inches, she standing five feet five inches in height, her hair being then nearly a foot longer than her height.

Hair, Natural Uses of.—That hair effects an important purpose in the animal economy we have evidence in its almost universal distribution among the mammiferous class of animals; and if we admit the analogy between the feather and the hair among all warm-blooded animals, additional evidence is obtained in the perfection of its structure, and again in its early appearance in the progress of development of the young. As a bad conductor of heat, it tends to preserve the warmth of the body; and in man it would have that effect upon the head, and serve to equalize the temperature of the brain. It is also a medium of defence against external irritants, as the heat of the sun's rays and the bites of insects, and against injuries inflicted with violence. Of special purposes fulfilled by the hairs, we have instances in the eyebrows and eyelids, which are beautifully adapted for the defence of the organs of vision; in the small hairs which grow in the apertures of the nostrils, and serve as guardians to the delicate membrane of the nose; and in similar hairs in the ear-tubes, which defend those cavities from the intrusion of insects.

Hair Papilla.—See **HAIR, PARTS OF A.**

Hair, Parts of a.—Each hair is divisible into two portions, the root and the free extremity. The root is somewhat pear-

shaped; that is, is a trifle larger below than at the surface of the skin, and its tissue is much softer than the exposed portion of the hair; it is, indeed, succulent, in the act of growing. At the deepest portion of the hair-follicle, or cavity in which the hair rests, there is a certain anatomical structure which is of the greatest importance in reference to the growth and vitality of the hair, namely, the hair *papilla*. This is, of course, quite distinct from the *papillæ* which we have seen to cover the surface of the corium, or true skin; it is situated deep in the

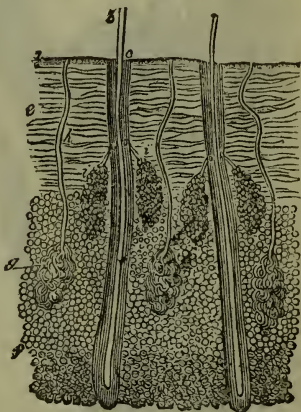


FIG. 1. THE SKIN OF THE HEAD.

tissues, at the bottom of each hair-follicle, and projects into a small cavity at the lower end of the hair. This little hair *papilla*, which is only $\frac{1}{16}$ of a line, or $\frac{1}{160}$ of an inch long, is of vital importance to the life of the hair, there being a minute blood-vessel in its interior, and it is believed that the reproduction of the hair, after it is lost from any reason, takes place from this *papilla*. Conversely is it also true that as long as this *papilla* is intact and in a healthy state, the hair will be reproduced, even though extracted artificially. Thus, plucking the hair out by the root does not destroy the life of the follicle: only the hair is removed, the *papilla* from which it regrows remains.

In Fig. 1 is represented a section of skin from the head, showing the roots of the hair and the sebaceous follicles: *a*, the horny

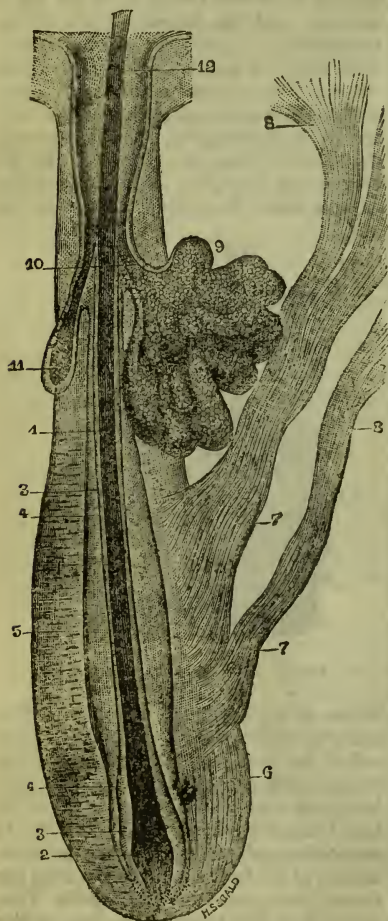


FIG. 2. HAIR IN ITS FOLLICLE, SEBACEOUS GLANDS, AND MUSCLE, FROM THE SCALP.

layer of the cuticle; *e*, the mucous layer; *g*, the sudoriferous glands; *h*, the sweat ducts proceeding from the sudoriferous glands to open on the surface of the skin; *f*, adipose

cellular tissue; *b*, a hair, showing its projection above the skin; *c*, the hair follicle.

A hair in its follicle is shown in Fig. 2: 1, 2, 3, 4, 5, 6, hair and its follicle; 7, 8, muscles, *erectores pilorum*; 9, 10, 11, sebaceous glands; 12, opening of hair follicle and duct for sebaceous glands.

Hair, Rapid Change of Colour

Of.—It is a common belief that hair has been known to turn grey in a single night. Dr. Erasmus Wilson, however, declares that he cannot give credit to the bleaching of the hair in a single night, or even in a single week:—"The first step in the change," he says, "may have been made in a single night, and on that night week the whole of the hairs of the head may have become white at their roots; this is perfectly possible, and the only reasonable explanation of the circumstance. Thus we learn that Marie Antoinette became grey in a short period from grief, as did the unfortunate Queen of Scots. But the error has a foundation in poetry as well as in fiction, and hence may not easily be dethroned. Lord Byron gives it the weight of his authority in the 'Prisoner of Chillon':—

'My hair is grey, though not with years;
Nor grew it white
In a single night,
As men's have grown from sudden fears.'

"Sir Thomas More, we are told, became grey during the night preceding his execution. According to Borellus, two gentlemen, the one a native of Languedoc, the other a Spaniard, were so violently affected, the first by the announcement of his condemnation to death, the latter by the bare thought of having incurred a severe punishment, that both became blanched in the course of a single night."

Hair, Scurf or Dandruff in.—

This is very frequently a cause of the decay and wasting of the hair. It is said to arise from excessive action of the sebaceous glands, the under secretion therefrom being deposited on the scalp, sometimes in an

unctuous layer, and sometimes in small flakes of a white colour, which, as they become dry, are easily removed, and generally fall from the head in the form of powder. By this means the pores and ducts of the scalp are prevented from performing their proper functions. Washing the head overmuch tends to increase the evil, the remedy for which is best found in an application which exercises a detergent action on the skin and a sedative influence on the sebaceous glands. "All strong stimulant," says Professor Parker, "should be avoided; the best remedies being found in lotions and pomades in which quinine, bark and verveine are the principal ingredients."

Hair, Shedding of.—The hairs of the various portions of the body seem to have a definite or normal length, on reaching which they are shed, to be replaced over and over again. The number of hairs on a part, and capable of being produced on it, exceed by far any estimate which could be prejudged with regard to it. On the scalp of a man twenty-five years of age, seven hundred and forty-four hair-pores have been counted in a square inch. If each gave exit to but one hair, the entire number on a scalp, which measures about one hundred and twenty superficial inches, would amount in round numbers to 90,000, but as many openings give exit to two or more hairs, the total number on an average head of hair may be estimated at about 120,000. Flaxen hair is much more abundant than that of darker shades.

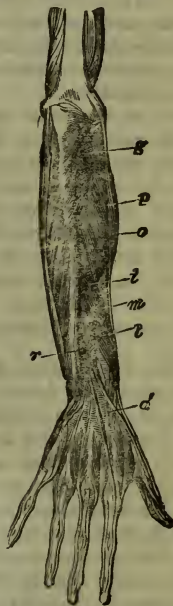
Hair, Strength of.—The strength of a hair is much greater than one would suppose. A single hair has supported a weight of 1,150 grains, or nearly two ounces and a half, though the breaking weight is generally somewhat less than this. Hair is also very elastic: it can be stretched to almost one-third of its own length, and regain its former length almost perfectly.

Hairs, Number of, on Human Scalp.—See HAIRS, SHEDDING OF.

Hammer-Palsy.—See BLACKSMITHS.

Hand.—Of all parts of the frame the hand is one of the most remarkable—indeed, after the brain, it is perhaps the most important feature in man's bodily structure. There is an endless diversity of operations of which man is capable, which are altogether dependent upon it, and the hand also forms one of the most powerful means of communication with human kind.

The human hand is a perfect instrument



MUSCLES OF ARM AND HAND.

of prehension: not only can the individual fingers be bent into hooks, but the thumb can be thrown across the front of the palm, so that it can be opposed to the several fingers, and objects can therefore be grasped between it and them; but further, this power of opposing the thumb permits objects to be held in the palm of the hand, which may be hollowed into a cup or made to grasp a sphere.

The number of digits in the hand is five,

which is the highest number found in the mammalia. They are distinguished by the names of pollex, or thumb, and index, middle, ring, and little fingers. Their skeleton consists of fourteen bones, of which the thumb possesses two, and each of the other fingers three.

Every movement of the hand depends on the contraction of a muscle or combination of muscles. The anatomy of the hand, however, with its marvellous combination of joints, tendons, and muscles, is a subject regarding which—though the temptation to discuss it here is great—the reader must consult some larger treatise.

The muscles of the hand and arm are shown in the accompanying illustration: *n*, representing the posterior surface of the forearm; *g*, the anconeus muscle; *i*, the extensor ossis metacarpi pollicis; *l*, the extensor primi internodii pollicis; *m*, extensor secundi internodii pollicis and extensor indicis; *o*, extensor carpi radialis brevis; *o*, point of insertion of extensor carpi radialis brevis; *p*, supinator brevis.

Hanging.—In hanging, the cause of death is the same as in drowning, namely, the exclusion of air from the lungs, or the stoppage of breathing; and not, as some have supposed, apoplexy from a stoppage of the blood in the head. The treatment of a person who has been suspended by a cord round the neck must altogether be precisely the same as has been recommended in cases of drowning; except that an attempt may, in the first place, be made to bleed in the arm; or, if a surgeon be at hand, in the jugular vein, with a view of relieving the vessels of the brain, which are, in such cases, probably distended, though not so as to produce apoplexy.

Should you ever be asked to give an opinion as to whether a person found dead in a state of suspension has had his death caused by hanging, or has had the cord tied round his neck after death, you may frequently satisfy yourself upon this point by an examination; for when the mark round the neck, where the cord was applied, is of

a deep purple colour, you may conclude that it was applied before death; but the converse of this does not hold good, because the purple mark does not take place in all who are hanged, but it never takes place when the cord is applied after death.

Hanging Meat, etc.—The practice of hanging up wild fowl, venison, and other game until the flesh has hardly tenacity enough to hold together and emits an odour which seems to attract the appetite of the epicure, but is repulsive to those of natural taste, is an unwholesome one. No food which has once undergone putrefaction can be healthy. In winter, game, if preserved in a dry, cold place and suspended, is better for being kept a week, or even ten days, or more, after it is killed. In summer, too, it need not be cooked much sooner, provided its corruption can be prevented by ice, in direct contact with which, however, it should never be placed, as the maceration by constant moisture will make it vapid to the taste and deprive it of much of its nutritious quality. All meat, in fact, before cooking, should be well dried, and only washed when it is to be boiled, and never if cooked, in any other way. Where the flesh is cut in such a shape as to admit of it, a good beating with the rolling-pin will be found to be an excellent preparative, and no steak or chop should be put on the fire without such a preliminary castigation.

Happiness, Perfect.—Although perfect happiness is not of this world, yet there are those who live from year to year under circumstances of very great enjoyment, even though every day may have its transitory cloud. "Since I have known the gospel, I have been as happy as an angel," said Lady Hastings to the Countess of Huntingdon. This was not a happiness of continuous ecstasy, but of that quiet, abiding kind which so materially adds to the length of human life. It is fret and worry and impatience, and spasmodic fits of passion and anger, which curtail human life.

Hardness of Water.—The hardness of water is a great defect. In preparing articles of food by boiling them in water, it is impossible to get them so well done in hard water as in soft; indeed, it is a good plan to boil the water first before employing it for such purposes. Greens, boiled in hard water, acquire a grey colour, as the earthy matters of the water are deposited upon them. Should they, however, be cooked in boiling water, which has also been boiled some minutes before, and especially if a pinch of carbonate of soda and a little salt be added, this defect will be remedied. To make tea with hard water it is allowable to use a little carbonate of soda, but a great deal too much is ordinarily employed. For washing the skin, hard water is not nearly so efficient as soft. For washing linen, and for baths, hard waters are objectionable; the linen washed in it acquires a bad colour, and the skin is clogged with useless curdy matter.

Hard Palate.—*See* PALATE.

Hard Palate.—*See* SOFT PALATE.

Hare.—The flesh of the hare is dense and not easily soluble, and particularly when it is killed after a long chase, so that the oil in the cellular membrane is mostly expended. No hare should be used after a year old, and the flesh of those that are bred in mountainous situations is preferable to that of any other. The flesh also eats better in winter than in summer.

Harmful Occupations.—In dealing with this subject, an attempt will be made to present some of the principal injuries which are inflicted on workmen in various trades by the noxious character of their work. We have first of all to deal with a large number of trades and many striking facts. Amongst those which have excited most sympathy—and which in truth are apt to do so—are those relating to the deadly effects of certain kinds of dust upon the lungs. The form of consumption which is thus produced is apt to begin gradually;

though in some trades the artisan is affected in a few days. It is not what is known as tuberculous consumption, for it is said that it is not hereditary, and that workmen who are suffering in its early stage are pretty sure to recover if they change their employment for a healthy one. There are a great many kinds of dust inhaled, and the effects are not at all unlike in the different trades; but, in general, there is a certain set of symptoms.

The effect of certain occupations in producing consumption may be estimated by the statement that while among butchers, tanners, glovers, coopers, and brewers, only from 7·9 to 11·2 in 100 have consumption, brushmakers have 49·1, file-cutters, 62·2, needle-polishers, 69·6, and flint-workers, 80 in 100. These figures represent continual experience, and are taken from a large number of workmen of all classes entering a large public hospital in Berlin. Expressed in words, they signify that while consumption is unfortunately a common disease, and may be expected to destroy ten per cent. of the population (more or less), there are certain trades so terribly noxious by the production of irritating dust, that those who work at them have consumption *from five to eight times as frequently* as is usual in other trades.

The chief poisonous substances used in the arts, and inhaled in the form of dust, are mercury, arsenic, and lead. But there are a great many other substances which produce poisonous or other deleterious emanations. These are the irritating vapours of ammonia, chlorine, and several acids—sulphurous, hyponitric, nitric, hydrochloric, and hydrofluoric acids.

Etching produces fumes of hyponitric acid when done upon metal, and of hydrofluoric acid when done upon glass. Both acids are corrosive: the latter is excessively so, and affects the eyes, the air-passages, and the hands.

Bleaching produces fumes of chlorine gas, which is not injurious in small amounts; nor is the sulphurous vapour from straw-hat bleaching of much consequence.

The manufacture of various chemicals is injurious to workmen.

Those who make sulphate of quinia are liable to an eruption which resembles eczema, not compromising life or health, but in some cases preventing workmen from continuing at the trade.

The manufacture of potassium bichromate disengages caustic vapours, which destroy the mucous membrane of the nose, and produce rapid-eating ulcers of the skin.

Women suffer more than men from several of the poisons we have named. They not only lose their health more readily, from a greater susceptibility to morbid influences of certain kinds, but their sexual system is very liable to be injured. They are much more susceptible than men to the influence of mercurial vapours, and those who are poisoned abort frequently, and even the children that are born to them are apt to be weak, sickly things, and die early.

The infants of female operatives in certain branches of china-making are almost all scrofulous, with an enormous mortality. Lead affects women more readily and seriously than men. They suffer from excessive flowing at the monthly period, and have frequent abortions.

The chief practical points in the prevention of disease arising from dust are:—

1. Removal of dust by ventilators, mechanical fans, etc. This is enjoined by law.

2. Wet-grinding, grinding in close vessels, etc., is sometimes practicable.

3. The wearing of masks over the face, composed of wire-gauze, wire frames covered with tarlatan, respirators of carded cotton, etc.; but these are hot and irksome.

4. If working with poisonous substances, the workmen should wash the exposed parts—face, hands, hair, beard—on leaving work, especially before eating, and should never eat in the workroom. After work, they should change their outer clothes, and a daily bath is very desirable in some occupations. To protect from lead and other dusty poisons, a linen suit, frequently washed, may be worn.

Harmful Occupations, Legal Restrictions on.—

The effects of certain poisons on the female sex and on children are so injurious that special laws are required to restrict their employment in manufactures where poisons are used. The restrictions of the Factory Act of 1878 are as follows:—

No woman, or person under sixteen, shall take meals in any part of glass-works in which the materials are mixed, or where flint-glass is made, or where grinding, polishing, or cutting is carried on; or in any part of lucifer-match works in which any manufacturing process or handicraft (except that of cutting the wood) is usually carried on; or in the dippers' room, dippers' drying-room, or china scouring-room, in any earthenware works.

There is absolute exclusion from labour in the following cases: girls under sixteen are not allowed to be employed in an establishment where bricks or tiles (not ornamental tiles) are made or finished, or salt is made or finished. No child under fourteen to be employed in a part of the building where dry-grinding in the metal trade, or the dipping of lucifer-matches, is carried on; under eleven years, all metal-grinding is forbidden, and fustian cutting. Persons under sixteen are forbidden to work at silvering mirrors by the mercurial process, or at making white-lead. Children under fourteen and girls under fifteen are excluded from parts where the process of melting or annealing glass is carried on.

Harvey.—See BLOOD, CIRCULATION OF THE.

Hats.—See HEAD COVERINGS.

Hatters.—See MERCURIAL POISONING.

Hay Fever.—One of the most remarkable, and not rarely one of the most distressing, maladies of summer is hay asthma. This affection, for which a number of different names have been prepared—such as hay fever, eye catarrh, nose cold, typical

summer catarrh, catarrhus æstivus, pollen catarrh, pollen asthma—was first fully described in 1819, by an English physician named Bostock, who wrote about it from personal experience, being himself a sufferer. Since his day more and more attention has been given to this ailment, and it now finds a recognised place in the systematic books on medicine. It is remarkable by reason of the small number of persons it attacks, the regularity of its annual return—often to the very day or hour—and the fact that our knowledge of the cause is much more exact and definite than in most diseases. It is often distressing by reason of the intensity of the symptoms, which frequently confine the patient to his room for days, or even weeks. Recovery always takes place.

Hay Fever, Causes of.—Certain conditions of age, race, sex, dwelling-place, social state, temperament, heredity, are the predisposing causes, which, in combination, render a limited number of individuals in any community incapable of resisting influences which are inoperative with the majority, but which in them produce the disease with the greatest certainty and regularity. These influences have been found to be inseparably associated with the summer, from May to September; that is to say, from the time of the blossoming of the grasses and cereals.

Bostock thought that the disease was due to heat; others, to dry air with intense light; or again, others, that moist air is the exciting cause of the affection. Dust, also, and the odour of certain plants and flowers, and ozone, have been viewed as exciting causes; but the general experience of both medical observers and their patients tends to establish the opinion that the pollen of certain plants, and that alone, is capable of producing hay asthma in most individuals who are liable to it. The elaborate and painstaking experiments of Dr. Blackley have gone far towards confirming the popular view.

It is familiar to all that dust, the scent of certain flowers, and volatile principles

emitted from the skin of certain animals, will produce marked irritation of the mucous membrane of the nose and lungs of some persons; but this is not the disease in question. This may and does happen at all seasons of the year; it is transient in character, vanishing with the cause; it lacks, finally, the intensity, the complexity, the daily revolution and variation produced by the true malady.

Dr. Blackley found that pollen—with seventy-four kinds of which he experimented—produced the symptoms of the disease, both in the fresh and dried states. He conducted a series of experiments, with a view of establishing the relative quantity of pollen floating in the air, in different localities at varying altitudes, and the relation between the urgency of the symptoms and the amount of pollen. These observations were extended over two years—1866 and 1867. The difference in quantity was very great in the two years. In cities the proportion was less than in the country. The greatest quantity was found to coincide with the highest temperature of the season; the higher strata of air—the experiments were carried into a height of 1,000 feet above the sea level—were found to contain a relatively greater amount, a fact contrary to what would have been supposed. It was observed, also, that a rainfall and rainy weather diminished the quantity, which was also influenced by the force and direction of the winds.

The experimenter found that the intensity of the symptoms, in his own case, varied in conformity with the above observations, being greatest when the amount of pollen floating in the air was greatest, aggravated on going from the city to the country, mitigated upon the fall of rain—observations constantly made by sufferers from this affection. It is also in accordance with this observation that patients suffer less when quiet than when in motion, and indoors than in the open air.

The pollen grain, which is of microscopic size, consists of a membranous sac with granular contents. The bursting of the membrane allows the granules to become

free : they then exhibit an active movement, which continues for some time. The bursting of the membrane is brought about by the absorption of water or other fluids. In addition to the mechanical effects of these granules in motion upon the surface of the mucous membrane, it has been suggested that some not yet investigated chemical action may take place.

The symptoms above described are due to an inflammation of the mucous membrane, with the accumulation of the inflammatory products in the tissue forming it, giving rise to thickening and altered secretion.

The duration of the attack is variable, but may be set down as six weeks. It may gradually subside, or may cease as abruptly as it began.

Persons who have once manifested the liability to hay asthma, and have once had the disease, are liable to suffer from it each returning year, unless they seek refuge in flight from the cultivated region. As yet the most diligent search has failed to bring to light any sure preventive treatment for those who are exposed to these exciting causes. The pollen is capable of being transported long distances and at considerable heights, as was shown by the experiments of Blackley.

Hay Fever, Symptoms of.—

Hay asthma may be described as a catarrhal affection of the mucous membrane lining the bronchial tubes, the upper air-passages, and that which covers the globe of the eyes, and lines the eye-lids (*conjunctiva*), attended with febrile action and occurring once a year, at the season of the blooming of certain cereals and grasses. The attack lasts a variable time, from a few days to six weeks, and is subject to a daily increase in the intensity of the symptoms usually towards evening. It is at once relieved, in the great majority of cases, by an escape from the exciting cause—the pollen of the plants named.

If the eye and nasal passage be alone or chiefly affected, the symptoms are those of a more or less pronounced coryza; while if the bronchial tubes be implicated, the symp-

toms are those of asthma. In many cases these two groups are associated; and to the swelling and hardness of the eyelids and excessive secretion of tears, and the most distressing symptoms of cold in the head, are added the difficult respiration, oppression, and general distress of asthma, the whole being reinforced by a slight febrile condition, general *malaise* and a leaky, chilly, and acutely sensitive skin, as in "cold"—certainly no very endurable array of ills. In some cases the patient has urgent difficulty in breathing, is obliged to sit bolt upright, is anxious and extremely restless, with convulsively clinched hands, and a disturbed pale or even livid face. But the intensity of the trouble is very variable, not amounting, in some cases, to more than annoying and persistent cold in the head.

The first attack may occur in early childhood; the period of adolescence and early life is most prone to it; and those who escape to middle life are not apt to become the victims of the disease; men are much more liable to it than women. The educated classes of society alone suffer from this malady. Doctors are especially liable to it. All observers agree that the class of persons who suffer least from hay asthma is that most exposed to its exciting causes, namely farmers. Whether this be due to their simple life, or to the fact that a constant exposure renders them less sensitive, is as yet undecided.

Those resident in rural districts are very much less liable than dwellers in cities. Persons of a strongly marked nervous temperament are more apt to suffer from the affection under consideration than others. The liability is in some cases hereditary. It prevails, to some extent, in all civilized countries, but is especially prevalent in England and the United States, the Anglo-Saxon races appearing to possess a peculiar susceptibility to the substances which call it forth.

Hay Fever, Treatment of.—

The treatment of the affection, when removal without the region in which the cause

exists is not practicable, must consist of palliative measures. Iodide of potassium, and the salts of bromine, arsenic and strychnine have been found useful. Professor Helmholtz has discovered vibrio-like organisms in the nasal secretions in this complaint, whose action is arrested by the local employment of quinine.

Hazel Nut.—This is an oily nut, the kernel of which has a mild farinaceous taste, but is inferior to the filbert. It agrees with the latter in its general qualities, and is accordingly, as an article of diet, liable to the same objections. An emulsion made of the kernels has been recommended in dry gripes. A sort of chocolate and bread have also been prepared from it. An oil is also extracted from it preferable to most others for mechanical purposes.

Headache.—Headache takes its origin from a variety of causes, and no one remedy will meet all the varying phases. In delicate women it is purely sympathetic; but the principal and general cause of headache is some derangement of the stomach, or indigestion.

When sick headache arises from this cause, take a glass of warm water, into which has been stirred rapidly a heaped teaspoonful of salt and kitchen mustard; and this, by causing instantaneous vomiting, will empty the stomach of the bile or undigested sour food, and a grateful relief is often experienced on the spot; then rest, with a few hours of sound refreshing sleep, will complete the cure, especially if the greater part of the next day is spent in mental diversion and outdoor activity, not eating an atom of food (but drinking freely of water or hot tea) until you feel as if a piece of plain bread-and-butter would "taste really nice."

Should the headache arise from superabundance of acid in the stomach, two teaspoonfuls of pulverized charcoal, stirred in half a glass of water, generally give instant relief.

For biliousness or bilious headache an

American physician recommends the patient, on getting up and on going to bed, to drink plenty of cold water, to eat for breakfast a little stale bread and a piece half as large as your hand of boiled beef or mutton, for dinner about the same thing, to go without supper, and exercise freely, so as to produce perspiration. In a few days the biliousness will all be gone. A speedier remedy is a dose of antibilious pills when the first symptoms of biliousness appear.

Headache, Homœopathic Treatment of.—There are many kinds of headache, excited by various causes and presenting various symptoms, but the most common are headache proceeding from indigestion, nervous headache, and sick headache. For the first of these the remedy is *Nux vomica* or *Pulsatilla*; for the second, *Ignatia*, and for the third and last, *Belladonna* and *Ignatia*, with *Ipecacuanha* when the headache is accompanied by vomiting. **Dose.**—One drop of the tincture in one tablespoonful of water at intervals of six hours.

Headache in Pregnancy.—When the stomach and bowels have been neglected, the patient frequently suffers from headache. In such cases the tongue will be found foul and loaded, and there will generally be acidity as well. This condition is to be remedied by attending to the cause which has given rise to it. Some mild aperient must be administered until the tongue becomes again clear, when the headache will generally be found to disappear as the state of the stomach and bowels improve. It may, however, be more neuralgic in its nature; and if so, a different line of treatment will be called for. In this case tonics must be given, such as quinine and iron. Should the headache persist and not yield to such treatment, medical advice had better be obtained.

Head Coverings.—One of the best popular axioms in regard to health urges that we should always keep the head cool

and the feet warm. To this latter injunction we would add "and dry," by way of emphasizing the importance of avoiding wet shoes and boots and consequently cold feet. Hats and bonnets should, therefore, be comparatively light in texture, not fitting so tight as to interfere with the circulation through the scalp, or give rise to headache by pressure upon the nerves around the crown of the head; and in winter, if more than one is worn, all should be of exactly the same thickness, or at least identical in their power of preventing loss of heat.

Health and Disease, Indications of.—The tongue used to be taken as a certain guide to the condition of the stomach and other digestive organs, and so the indications afforded by it were carefully studied. Though of less value than was supposed, still the signs afforded by the tongue are not to be neglected. The "fur," as it is called, is formed from the scaly covering of the lips and cheeks, as well as from the tongue itself. This is agglutinated by the saliva drying, and so gives rise to the furred appearance spoken of. Some people sleep with their mouths open; these have almost invariably an accumulation of fur on the tongue in the morning. This may mean nothing. Again, any irritation of the mouth may give rise to an unusually copious production of this substance, and so the tongue is furred. This fur often decays and produces putrid gases, which cannot fail to be prejudicial to health. When the fur is due to stomach mischief, that is generally of an intestinal or semi-inflammatory character, and thus the appearance of the tongue and mouth affords not only valuable means for making out the nature of the disease, but also helps us to some clue to its treatment.

The alterations in hunger and thirst are often of value in enabling us to come to a conclusion as to the existence and nature of stomachic derangement. There may be loss of appetite (anorexia) with dyspepsia; if so, the malady is generally inflammatory, and rather acute in its nature. The oppo-

site condition (boulimia, or voracious appetite) is hardly a sign of dyspepsia, though it does occur. More frequently it is associated with such a malady as diabetes, or the presence of tapeworms. This is different from the craving or sinking feeling often experienced. Eating food repugnant to ordinary appetites (pica) is more a sign of hysteria than of dyspepsia. Thirst is most common in irritative states of the stomach, and then mostly manifests itself some hours after a meal. Of all the symptoms derivable from such sources, thirst and loss of appetite are the most valuable.

The clearness of the complexion is considered the best criterion of a man's being in good condition, to which we add the appearance of the under lip, which is plump and rosy in proportion to the plethora of the constitution. This is a much more certain symptom of vigorous health than any indication you can form from the appearance of the tongue or the pulse.

Health and Education of the Young.—This subject is one of special importance and interest to parents and all who have the charge and care of young children, and it was treated of a few years since in an able lecture delivered by Dr. Richardson. On that occasion Dr. Richardson pointed out very clearly that health and education are not going hand in hand, as they should do; the consequence of which is that the mind is failing and the health sickening. The development of the minds of those men who have contributed to the literature of the past was not forced or checked by human interference.

The present mode of education for the young is not compatible with healthy life, and, therefore, does not produce the power which it should produce. The first evil bearing upon education is the too early application by children to study, even in many cases before they have learned how to play, and then there is the fault of making play a set-off against work. In schools children are made to do work which would be a hard day's work for grown people, and

the brain being very active, the children are rendered particularly precocious, which often encourages people to press their children further, to the injury of their physical and mental strength in after life. Overstudy renders children particularly liable to organic diseases, and makes men suffer more severely. This breach between health and education is still further widened by making no distinction between the tasks imposed upon children of different physical power. Upon the subject of extreme competition in learning, which Dr. Richardson strongly deprecates, as being the guiltiest of the guilty in the matter of health, he says that young men are frequently crushed mentally and physically by the insanity of their efforts to compete at public examinations.

This has reference to men; but what will happen to the physical power of our race if women follow the example of the sterner sex and flutter in the candle of learning? If women do this, it will be bad indeed for future generations.

Continued and varied action of the mind is essential to health and comfort. The first stage of education should be devoted to the simplest of studies, the child being allowed without pressure to take nature as a second mother for its tutor; in the second stage it should be encouraged rather than forced on, the period of adolescence should be an age for the introduction into the garden of knowledge, and, for the rest, let the course be a continued learning.

Health, Aphorisms and Proverbs of.—The following aphorisms and sayings relating to health are gathered from various sources, and are arranged alphabetically:—

"A blitho heart makes a blooming visage."

"A good life keeps off wrinkles."

"A good surgeon must have an eagle's eye, a lion's heart, and a lady's hand."

"A handful of good life is better than a bushel of learning."

"A life without suffering would be like a picture without shade."—HAMERTON.

"A man as he manages himself may die old at thirty, or young at eighty."

"After dinner sit awhile; after supper walk a mile."

"Against diseases here the strongest fence Is the defensive virtue abstinence."

—HERRICK.

"Agues come on horseback, but go away on foot."

"All sick people want to get well, but not always in the best way. Said a wealthy man, 'Doctor, strike at the root of the disease,' and smash went the decanter under the faithful physician's cane."

"Alternate rest and labour long endure."

"An ounce of prevention is worth a pound of cure."

"And truly, for aught I see, they are as sick that surfeit with too much, as they that starve with nothing."

"Be not solitary; be not idle."

"Be temperate in all things."

"Be timely wise;

With health all taste of pleasure flies."

—GAY.

"Better lose a supper than gain a hundred physicians."

"By adopting an abstinent plan of diet, even to a degree that produces a sensation of want in the system, we do that which is most likely to create appetite and increase the powers of digestion."—ABERNETHY'S *Surg. Obs.*

"By examining the tongue of a patient, physicians find out the diseases of the body, and philosophers the diseases of mind."—JUSTIN.

"Causing a symptom to disappear is very seldom the cure of any human infirmity. The true course is to prevent the symptom."

"Cheese is a peevish elf;

It digests everything but itself."

"Children and chicken must be always picking."

"Diet cures more than the lancet."

"Early to bed and early to rise,

Make a man healthy, wealthy, and wise."

"Eat a bit before you drink."

"Eat at pleasure, drink by measure."

"Employment is Nature's physician, and is essential to human happiness."

"Every man is either a fool or a physician after thirty years of age."

"Feed sparingly and defy the physician."

"Few would believe how far a little health well managed may be made to go."

"Fond of lawsuits, little wealth,

Fond of doctors, little health."

"From health contentment springs."—

BEATTIE.

"Go to bed with the lamb and rise with the lark."

"God and the doctor we alike adore,
But only when in danger, not before;
The danger o'er, both are, alike requited,
God is forgotten and the doctor slighted."

"God cures, and the doctor gets the credit."

"Habit becomes second nature."

"He that goes to bed thirsty rises healthy."

"He that would have a clear head, must have a clean stomach."—CHEYNE *On Health*.

"He that would live for aye must eat sage in May." [Sage was esteemed a very wholesome herb by our ancestors.]

"Here is a short prescription for a healthy and happy old age: Short but cheerful meals, music, and a good conscience."

"Hope not for impossibilities."

"How much sudden changes of the weather in all seasons of the year affect the heads and hearts, especially of the finest tempers, is hardly to be believed by those who have not paid attention to such things."

"If mankind in the present day were strictly to adhere to those practices which promote the health and well-being of their minds and bodies, and as strictly to abstain from those which tend to injure them, there would be little or no cause to complain that our race is degenerating, and that the men of modern days scarcely possess the sixth part of the strength of their forefathers."

"In general, mankind, since the improvement of cookery, eat twice as much as nature requires."—FRANKLIN.

"In these days, half of our diseases come

from the neglect of the body in the overwork to the brain. In this railway age, the wear and tear of labour and intellect go on without pause or self-pity. We live longer than our forefathers, but we suffer more from a thousand artificial anxieties and cares. They fatigued only the muscles, but we exhaust the finer strength of the nerves."

—BULWER LYTTON.

"It is easy for a man in health to preach patience to the sick."

"It is too frequently the pride of students to despise those amusements and recreations which give to the rest of mankind strength of limbs and cheerfulness of heart."—JOHNSON.

"Law and physic are the hotbeds of vice and disease."

"Many a pie has cost an industrious husband a twenty-pound note in doctor's bills; and many a human life has paid for an apple dumpling."

"More die by food than famine."

"Music helps not the toothache."

"My dart," cried Death, "I cannot find,

So now I'm quite at sea,"

Quoth Dr. Bolus, "Never mind—

Here, take this recipe."

"No greater error in medicine can be committed than the relying upon a single sign as indicative of a disease, which, when present, is evidenced by several."

"No man can be said to enjoy health who is only not sick, without he feel within himself a lightsome and invigorating principle which will not suffer him to remain idle."—SPECTATOR.

"Nor love thy life, nor hate; but what thou livest

Live well; how long or short, permit to heaven."—MILTON.

"Old men go to death; death comes to young men."

"Old young and old long."

"One hour's sleep before midnight is worth two after."

"Over-exertion, or anxiety of mind, disturbs digestion infinitely more than fatigue of body—the brain demands a much more abundant supply of the animal spirits than

is required for the excitement of mere legs and arms."

"Physicians rarely take medicine."

"Preserving the health by too strict a regimen is a wearisome malady."—LE ROCHEFOUCAULD.

"Reason's whole pleasure, all the Joys of Sense,

Lie in three words, Health, Peace, and Competence.

But Health consists in temperance alone;

And Peace, oh Virtue! Peace is all thy own."—POPE.

"Sickness is a sort of old age; it teaches us a difference in our earthly state, and inspires us with thoughts of a future better than a thousand volumes of philosophers and divines."

"Simple diet is best: for many dishes bring many diseases."—PLINY.

"Socrates used to say that it was pleasant to grow old with good health and a good friend, and he might have reason. A man may be content to live while he is no trouble to himself or his friends, but after that it is hard if he be not content to die. I knew and esteemed a person abroad who used to say: 'A man must be a mean wretch who desired to live after threescore years.'—SIR WILLIAM TEMPLE.

"Soft churgeons make foul sores."

"Temperance is a bridle of gold; he who uses it rightly is more like a god than a man."—BURTON.

"Temperance is reason's girdle and passion's bridle."—JEREMY TAYLOR.

"The air of a window is as the stroke of a crossbow."—*Italian*.

"The best physicians are Dr. Diet, Dr. Quiet, and Mr. Merryman."

"The excesses of our youth are drafts upon our old age, payable, with interest, about thirty years after date."—COLTON.

"The grand secret seems to be, to contrive that the exercise of the body and that of the mind may serve as relaxations to each other."

"The head and feet keep warm; the rest will take no harm."

M. D

"The ingredients of health and long life are Great temperance, open air, Easy labour, little care."—SIR PHILIP SIDNEY.

"The intemperate die young and rarely enjoy old age."

"The labour we delight in physics pain."
—SHAKESPEARE.

"The loss of our strength is much oftener occasioned by the vices of our youth than by the ravages of age; it is early intemperance and licentiousness that consign to old age a worn-out constitution."—CICERO.

"The man who spends his energies deliberately has the most inexhaustible bank to draw upon, and will draw the longest."

"The mind ought sometimes to be amused, that it may the better return to thought and to itself."

"The only rule for a rich man to be healthy is by exercise and abstinence, to live as if he were poor."—SIR WILLIAM TEMPLE.

"The patient can oftener do without the doctor than the doctor without the patient."
—ZIMMERMAN.

"The surest way to health, say what they will,

Is never to suppose we shall be ill;
Most of those evils we poor mortals know
From doctors and imagination flow."

—CHURCHILL.

"The wise for cure on exercise depend.

God never made his work for man to mend."

"There are many hygienic rules which it is actually pleasanter, from the very first, to live in accordance with than to disregard."

"There is a wisdom beyond the rules of physic: a man's own observation, what he finds good of and what he finds hurt of, is the best physic to preserve health. . . . If you make physic too familiar, it will make no extraordinary effect when sickness cometh. I commend rather some diet for certain seasons, than frequent use of physic, except it be grown into a custom; for those diets alter the body more, and trouble it less."—BACON.

"They who would be young when they are old, must be old when they are young."

D D

"Those who are candidates for health, must be as circumspect in the task they set their mind, as in the exercise they give to their body."

"'Tis good to walk till the blood appears on the cheek, but not the sweat on the brow."—*Spanish*.

"'Tis the great Art of LIFE to manage well the restless mind."—ARMSTRONG.

"To bear pain decently is a good sign of inward strength, and an undoubted proof of a great mind."—ELMES.

"We seldom repent of having eaten too little."

"What is the true good? Knowledge. And true evil? Ignorance."

"What we have been longest used to is most likely to agree with us best."

"When man is born," says an eastern proverb, "he weeps and others smile. When man dies, he smiles and others weep."

"Where the wound is the plaster must be."

"Who goes to bed supperless, all night tumbles and tosses."

"Who steals an old man's supper does him no wrong."—*Spanish*.

"You should not touch your eye but with your elbow."

"You will never live to my age without you keep yourself in health with exercise, and in heart with joyfulness."—SIR PHILIP SIDNEY.

Health, Definition of.—No small amount of time and trouble has been expended by various writers upon sanitary science in endeavouring to frame an exact and yet comprehensive definition of health. The most satisfactory with which we are acquainted is one founded upon Bichat's definition of life, which he declared to be organization (that is, an organized body or part of a body) in action. From this we describe health as perfect organization in perfect action; and disease, the divergence from health, as disturbed organization in disturbed action.

In former ages, both medical men and the community at large looked upon each separ-

ate disease as a separate entity, which in some mysterious way fastened upon our vitals, and if not cast out by drugs more potent than itself, destroyed its victim in the struggle for life or death which ensued between it and the life-force of the individual assailed.

At present, however, physicians recognise no such antagonists. Diseases are no longer looked upon as separate existences, but are known to be only disturbances of perfect life, departures from health, which as a rule are gradual in their attack and even more gradual in their decline; and such terms as to struggle against a disease or to do battle with a malady, have only a figurative signification, and refer to the causes of complaints, or to the symptoms and effects of an illness, such as the diarrhœa and the weakness which occurs in typhoid fever.

In the abstract, we all admit that the enjoyment of health is the first of earthly blessings, and that without it all others may be lavished in vain; and yet, as has been quaintly asked by Maynwaring, in his work on "The Method and Means of Health," first published in 1683, "Who is he that values health at the rate it is worth? Not he that hath it; he reckons it among the common ordinary enjoyments, and takes as little notice of it, or less regards it, than his long-worn clothes; perhaps more careful of his garments, remembering their price; but thinks his health cost him nothing, and coming to him at so easy a rate, values it accordingly, and hath little regard to keep it; is never truly sensible of what he enjoyed until he finds the want of it by sickness; then health, above all things, is earnestly desired and wished for."

In proportion, however, as we consider the matter with that attention which its importance really deserves, we shall become anxious rather to take care of health when we have it, than first to lose it, and then exert ourselves to recover it. Such was evidently the feeling which elicited the following remarks from the same clear-sighted author:—

"You that have health," says he, "and

know not how to prize it, I'll tell you what it is, that you may love it better, put a higher value upon it, and endeavour to preserve it with a more serious, stricter observance and tuition.

"Health is that which makes your meat and drink both savoury and pleasant; else Nature's injunction of eating and drinking were a hard task and slavish custom.

"Health is that which makes your bed easy and your sleep refreshing; that revives your strength with the rising sun, and makes you cheerful at the light of another day; 'tis that which fills up the hollow and uneven places of your carcase, and makes your body plump and comely; 'tis that which dresses you up in Nature's richest attire, and adorns your face with her choicest colours.

"'Tis that which makes exercise a sport and walking abroad the enjoyment of your liberty.

"'Tis that which makes fertile and increaseth the natural endowments of your mind, and preserves them long from decay, makes your wit acute and your memory retentive.

"'Tis that which supports the fragility of a corruptible body and preserves the verdure, vigour, and beauty of youth.

"'Tis that which makes the soul take delight in her mansion, sporting herself at the casements of your eyes.

"'Tis that which makes pleasure to be pleasure, and delights delightful, without which you can solace yourself in nothing of terrene felicities or enjoyments."

But "now take a view of yourself when health has turned its back upon you, and deserts your company; see then how the scene is changed—how you are robbed and spoiled of all your comforts and enjoyments.

"Sleep that was stretched out from evening to the fair bright day, is now broken into pieces and subdivided, not worth the accounting; the night that before seemed short is now too long, and the downy bed presses hard against the bones.

"Exercise is now toiling, and walking abroad the carrying of a burden,

"The eye that flashed as lightning is now like the opacous body of a thick cloud that rolleth from east to west: swifter than a celestial orb, is now tired and weary with standing still; that penetrateth the centre of another microcosm, hath lost its planetary influence, and is become obscure and dull, etc."

If such, then, be a true picture of the opposite conditions of health and disease, what stronger inducements can any one require to give him an interest in the "study and observance of Nature's institutions," seeing they are the only means by which "the beloved ends and wished-for enjoyments" can be attained, and that we "may as likely keep or acquire riches by prodigality as preserve health and obtain long life by intemperance, inordinate passions, a noxious air, and such like injurious customs, ways, and manner of living?"

Health, Effect of Atmospheric Conditions on.—See ATMOSPHERIC CONDITIONS, EFFECT OF, ON HEALTH.

Health influenced by Heat and Cold.—The agency of heat and cold in disordering our health is powerful and incessant enough to demand our most watchful care, in order to guard ourselves against serious or fatal injury. Up to a certain point, of course, they act as antidotes to each other; and it is a maxim as old as the days of Hippocrates, that the diseases of summer are cured by the approach of winter, and those of winter by the advent of summer.

Health, Light Needful to.—See LIGHT NEEDFUL TO HEALTH.

Health, Management of, During Pregnancy.—Under this heading the consideration of several subjects is necessary. These are, FOOD AND DRINK, CLOTHING, EXERCISE, ABLUTIONS, SLEEP, VENTILATION, and the MIND. Remarks and instructions on each will be found in this volume under the headings here given in connection with pregnancy.

Health, Preservation of, in Ague Districts.—*See* AGUE DISTRICTS, PRESERVATION OF HEALTH IN.

Hearing, How Caused.—It will be sufficient for all practical purposes first to assert that hearing is caused by certain movements in the air that are called sound-waves. Let us follow a wave of sound from its source into the ear and brain, where it is interpreted as sound. Thus we shall learn what hearing is.

When a wave of sound reaches the side of the head, part of it is taken up by the auricle and directed more accurately into the external auditory canal. Passing down this at the rate of 1,090 feet and more per second at ordinary temperatures, the wave reaches the drumhead, which is thrown into a to-and-fro motion by the wave. The drumhead imparts this motion to the malleus, and by it to the other ossicles, thus causing the entire chain to move in and out, but not to vibrate in the sense that a violin string vibrates. They assume rather what is known as a pendulum-like movement or oscillation.

This movement on the part of the stirrup-bonelet is communicated to the water of the labyrinth. Through this fluid the impressions of the sound-wave on the chain of

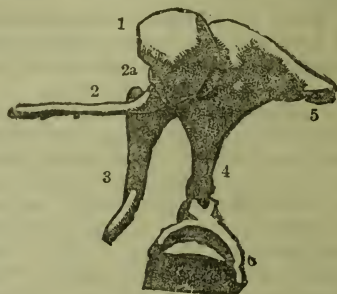


FIG. 1.—THE THREE BONES OF HEARING OF THE RIGHT EAR IN THEIR NATURAL POSITION, SEEN FROM WITHIN. Magnified about 4 times.

bones is conveyed to the soft part of the labyrinth, where the nerve lies, and it is the perception of this movement in the water of the labyrinth, by the nerve-threads and the brain, which constitutes hearing.

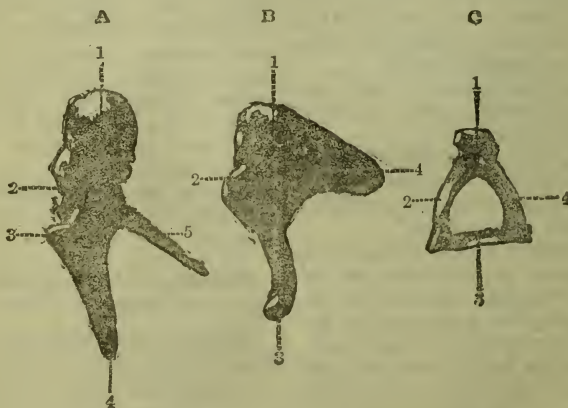


FIG. 2.—THE BONES OF HEARING. Magnified 4 times.

By this means the little foot-plate of the stirrup-bone (*see* Fig. 1: 6) makes short in-and-out movements or excursions in the oval window which opens into the vestibule.

The three bones of hearing of the right ear are shown in Fig. 1: 1, head of hammer; 2, the long process and 2a the short process of the hammer; 3, the handle of the

hammer; 4, the long limb of the anvil; 5, its short limb; 6, the stirrup.

In Fig. 2 the three bones of hearing are shown separately. A, right hammer: 1, head; 2, neck; 3, short process; 3, 4, handle; 5, the long process.

B, right anvil: 1, body; 2, joint surface for union with hammer (see Fig. 1); 3, long process, or leg. The point 3 unites with the head of the stirrup; 4, short process, or leg, which is joined to the back part of the tympanic wall.

C, Right stirrup: 1, head; 1 and 4, the legs; 3, the foot-plate, which fits into the oval window.

Hearing Trumpets.—A child is rarely obliged to use a speaking or hearing-trumpet, although many a child might be kept from becoming a deaf-mute if he were taught to speak by using some form of trumpet to aid him in hearing. There are many adults, however, who from the incurable nature of their deafness, are obliged, or should be obliged, to use a hearing-trumpet. Such an aid to hearing is not only an advantage to them, but a great comfort to their friends, as it saves the latter a painful effort to talk.

What form of hearing-trumpet is the best cannot be described here, and different patients require different forms of trumpets, tubes, etc. The best plan for a deaf person to adopt in choosing this instrument is to go to a reliable instrument maker, and try the samples until he finds one that makes him hear well. Some kinds of deafness, as those where the nerve is paralyzed by a blow on the head or by disease in the brain, no trumpet can help.

All instruments of any value must, from the nature of acoustics, have a certain size, and hence must be plainly visible, otherwise they will not augment the sound by resonance. Hence, all invisible auricles, etc., are self-evident frauds, as they are too small to augment sound. The very small gold and silver tubes, or "auricles," as they are called, are very expensive, and, except in the collapse of the auditory canal

in old people, are utterly worthless. They are, in fact, worse than useless in all cases but those mentioned, since they fill up the ear and render the patient doofer.

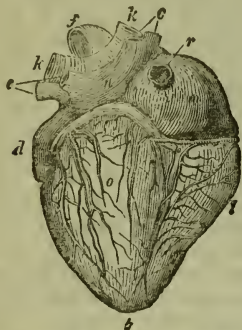
Heart.—The heart is one of the most wonderful machines with which mankind are acquainted. The heart is the great forcing pump which forces the blood through the arteries, capillaries and veins, through the lungs, and back to itself again. The heart is situated in the chest, behind the breast-bone, but more to the left than to the right side. The lower portion of the heart—the thinner end of it, called the *apex*—inclines towards the left side, where it may be felt to beat between the fifth and sixth ribs, about two inches to the left of the breast-bone. The heart lies in a bag, called the *pericardium*, almost surrounded by the lungs, which, along with some other structures, occupy the whole cavity of the chest.

The heart may be described as a hollow muscular ball divided into four cavities, by a vertical septum or partition, and by a horizontal septum or partition. The two upper cavities are called the *auricles*, the two lower are called the *ventricles* of the heart. Each of the four cavities is capable of containing from five to six ounces of blood. The walls of the auricles are much thinner than those of the ventricles. The wall of the left ventricle is much thicker than that of the right ventricle. The left ventricle is most powerful, for it has most work to do, its wall being nearly half an inch in thickness.

The auricle and ventricle on the right side are quite separate from the auricle and ventricle on the left side. The right auricle communicates with the right ventricle, and the left auricle with the left ventricle, through holes about an inch in diameter, which are in the partition between the auricles and ventricles. These are called the *auriculo-ventricular* openings.

The posterior surface of the heart is shown in the illustration on the next page: *c, c*, the pulmonary veins; *k, k*, the pulmonary

artery; *f*, the aorta; *d*, the superior vena cava; *n*, the left auricle; *m*, the right auricle; *r*, the inferior vena cava; *o*, the left ventricle; *l*, the right ventricle; *b*, the apex of the heart.



POSTERIOR SURFACE OF THE HEART.

Heart, Action of the.—The action of the heart consists in its contraction and dilatation, and this important organ contracts every twenty-four hours, in a healthy grown person, over one hundred thousand times. Asleep or awake its action goes constantly on.

Heart and Kidneys.—Among the internal organs of animals which are eaten are the heart and the kidneys. Both of these organs are of a very dense and firm texture, and cannot be looked upon as digestible. They are highly nitrogenous articles of food, but the heart usually contains some fat.

Heart and Lungs, Functions of the.—The lungs are thus continually giving pure blood to the left side of the heart, while they are as incessantly receiving impure blood from the right side. They are like a person receiving with one hand and giving away with the other. The change we have seen that the blood undergoes in the lungs is that it is changed from a dark purple to a light red colour. Now,

if we take the dark venous, or impure, blood from a living animal, we may change it into light blood by passing a stream of oxygen gas through it, or if we take the pure arterial, or light-coloured, blood and pass carbonic acid through it, it at once becomes dark coloured. We thus observe that the change in colour is due to the action of these gases. The red blood globules are the oxygen carriers of the blood, and it is in these little bodies that the change in question takes place. The blood in passing through the lungs gains oxygen, loses carbonic acid, becomes 1° or 2° warmer, coagulates, or clots, sooner, and contains more fibrine.

A front view of the heart and lungs is seen in the illustration on the next page: *a*, the crico-thyroid muscle; *j*, *j'*, the right and left common carotid arteries; *b*, the trachea, or windpipe; *c'*, the right innominate vein; *c*, the left innominate vein; *d*, the right internal jugular vein; *e*, the subclavian vein; *g*, the arch of the aorta; *h*, the innominate artery; *i*, *i'*, the right and left subclavian arteries; *s*, the superior lobe of the right lung; *t*, the middle; *u*, the inferior lobe. The left lung is divided into a superior lobe, *s*, and an inferior lobe, *u*; *v*, the interlobular fissure on the right lung; *v'*, the interlobular fissure on the left lung; *w*, the fissure which causes a partial division of the superior lobe of the right lung to form the middle lobe; *p*, *p'*, the mediastinum; *r*, *r*, the root of the lungs—the part of which they communicate with the trachea through the bronchi, and receive and emit their blood-vessels; *x*, *x*, the convex surface of the diaphragm; *g*, the pericardium.

Heart, Diseases of the.—Diseases of the heart arise from many causes as follows:—

1. *Traumatic causes* or those caused by external injuries; falling from a height or from a horse when hunting has ruptured some of the valves and set up heart disease; a sword wound or stab, and a pistol shot would probably prove fatal at once; sailors

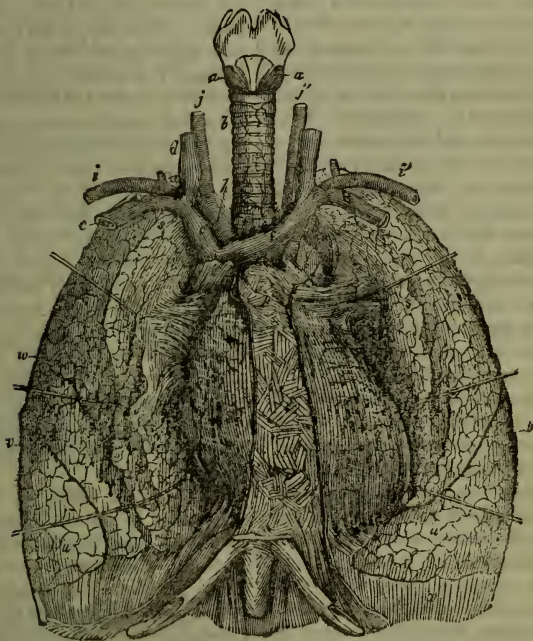
are liable to suffer from aneurism of the aorta, and from heart disease from lying on their chests while furling up the sails; the tight stocks of our soldiers, and the old way of wearing a knapsack tended to disease by preventing a ready flow of blood through the vessels.

2. *Inflammation* may take place in the

sists in the deposit of lime-salts from the blood in parts in which living changes have ceased to exist.

5. *Fibrous thickening* of the valves may occur and cause constriction of the orifice, and in that way obstruct the passage of the blood.

In all cases of heart disease, the best



FRONT VIEW OF THE HEART AND LUNGS.

pericardium, or endocardium, or in the muscular wall of the heart.

3. *Atheroma* of the valves or lining membrane of the aorta may occur; this comes on in old age, and in those who have lived hard or been badly fed; it consists of a fatty change which comes on in the tissues in consequence of want of nourishment.

4. *Calcification* of the valves is often associated with the last change, and it con-

medical advice should be obtained, and for that reason they are passed by with the briefest possible mention in this work.

Heart, Palpitation of the.—*See* PALPITATION OF THE HEART.

Heart, Sounds of the.—*See* SOUNDS OF THE HEART.

Heartburn.—This ailment is also

known by the name of waterbrash. There are patients into whose stomachs, when empty, there is poured out a vast quantity of transparent liquid, sometimes tasteless, sometimes sweet, sometimes acid, or of an acrid taste. The complaint is known by the name of heartburn or waterbrash; it is more common in women than in men, and exists in every degree of severity or mildness. When the quantity of liquid formed is considerable, great extenuation often follows. It is commonly unproductive of pain, and is thrown up without nausea, the mouth filling spontaneously with the liquid, which rises without an effort, or as in animals chewing the cud. Sometimes, however, it is the reverse, and the patient suffers very violent pain at the stomach, which is only relieved upon her bringing up in the same manner a pint or more of limpid and perhaps tasteless fluid; this may happen three or four times in the day. By an observation of Andral, the complaint appears to arise from a low degree of inflammation of the glands of the stomach, which become slightly swollen, and pour out a more or less altered mucus, which is the waterbrash. It is a sort of relaxed inflammation, and accordingly is cured by astringents.

The number of persons suffering from heartburn, or waterbrash, is very large. In a ladies' seminary it was asked how many suffered more or less from heartburn, and more than half the hands went up. It is a very common affection, and is the introduction to graver forms of indigestion. It should not be treated either with indifference or alkalies, but by the observance of the following suggestions: avoid soups; drink nothing at your meals; say "No, thank you" to the pie and cake, and go without your supper.

Heartburn, Treatment of.—

"The means," says Dr. Lewis, "most commonly employed by the ignorant in the treatment of heartburn is the use of some alkali to neutralize the acid. A little soda, for example, relieves the sufferings at once. But this chemical remedy is not a good one,

for it seems in some way not, perhaps, easy of comprehension, to insure a return of the malady. Strange to say, the opposite course appears to be more successful, viz., the employment of small doses of acids. I have known persons who had suffered long from waterbrash to cure themselves by the daily use of a little vinegar, or a few drops of lemon juice after each meal.

"A college student consulted me during his junior year for a most distressing heartburn. It seemed to me a case in which a cure might be effected on the Homœopathic law, and I prescribed twenty drops of lemon-juice to be taken at the close of each meal. He called upon me several months after, to say that it not only had cured him, but that he had resolved himself into a doctor among his fellow-students who happened to suffer from heartburn, and that lemon-juice was known as a good remedy throughout the whole institution. I must not omit to mention that I advised my patient not to drink anything at his meals, nor within two hours after eating. He had, in prescribing the lemon-juice for pyrosis, been careful to urge the omission of drinks at and immediately after meals, and likewise the avoidance of soups. In fact, sufferers from the malady under consideration may obtain relief by a dry diet.

"The saliva, which is alkaline, affords some relief in cases of heartburn. I have, for a good many years, been in the habit of advising my patients who might be temporarily afflicted with heartburn, to chew spruce gum and swallow all the saliva. It affords the most grateful relief, and is not open to the same objection which may be urged against soda, saleratus, and other strong alkalies.

"Of course the cure of this affection is to be sought in the discontinuance of that table error which produces it. It is not easy, in round terms, to say what this error is. But the discontinuance of drinks at meal-time, and of liquid foods will generally afford relief. It may be necessary to discontinue pastry, fat meats, and butter. It would be a rare case that did not give way

at once under a beef and bread diet, drinking only water, and that, so far as practicable, on rising in the morning and lying down at night. At these times it may be taken *ad libitum*."

Heartburn, Treatment of, Formulæ for.—The following formulæ are appropriate in the treatment of heartburn:—Ten grains of kino, with a third of a grain of opium, taken in water three times a day; or three grains of alum and five of kino, so taken; if the fluid thrown up is acid, an alkali should be combined with the astringent.

An agreeable effervescent drink for heartburn, which is highly recommended, is to mix the juice of one orange, water, and a lump of sugar in proportion to the acidity of the orange, together, and then add about half a teaspoonful of bicarbonate of soda; stir and effervescence will ensue.

Heartburn in Pregnancy.—During pregnancy many females suffer from the ailment known as heartburn. For the relief of their condition both as regards treatment and prescriptions, they must follow the instructions given immediately above with reference to heartburn and its treatment.

Heart Stroke.—See ANGINA PECTORIS.

Heat and Colour.—In tropical climates, where clothing is required largely as a protection against heat, we find that texture has little to do with its efficacy as regards direct rays of the sun. The main consideration is the colour of the fabric, the best garments being white, then grey, yellow, pink and blue, and black worst of all. When not exposed to the rays of the sun, this effect of colour is not marked, and the thickness and conducting power of the material, especially the former of these conditions, are those which influence heat.

There is a familiar experiment, first made by Benjamin Franklin, which proves that

the colour of all materials has a great effect upon their power of absorbing heat. He took a number of pieces of cloth, of the same size and kind, but of different colours, and placed them on a bank of snow, exposed directly to the sunshine. He soon found that the snow melted more rapidly under some than others, and discovered that this was in proportion to the darkness of their tint. The snow under the black cloth was the first, and that under the white the last to melt. He accordingly drew the inference that the absorbing power of heat of dark substances was greater than that of the lighter colour. The result of this experiment has been acknowledged as establishing a scientific principle, which practical people have confirmed by the experience of habitual usage. White garments have been found to be much cooler than dark ones of the same material. When a boy, therefore, throws off his jacket, which is ordinarily of some deep colour, and exposes his shirt-sleeves, in hot weather, he cools himself by two processes. He not only lets out internal heat, by getting rid of a bad conductor, but keeps off external heat by substituting a bad absorber for a good one.

A white or light-coloured straw hat will, of course, be cooler to the head than a black or dark-coloured one. As the hair, if it is possessed in ordinary abundance, will generally be a sufficient covering in all seasons, it may be doubted whether a black hat, of any material, is ever necessary. If fashion were less peremptory, and people were allowed to regard their sense of comfort more, the white hat would be oftener seen even in winter.

Heat and Force-giving Foods.—These consist principally of starch, sugar, and fat. At the same time they may be divided into two groups. The starch and sugar have the following composition:—

Carbon	12 parts.
Hydrogen, 9 . . . }	Water, 18 parts.
Oxygen, 9	

In fact, they contain oxygen and hydrogen

in the proportion in which those elements form water, and when taken the carbon is alone oxidized, and forms the heat-giving element. It is different with fat and oleaginous foods. Their composition is as follows:—Carbon, 11 parts; hydrogen, 10 parts; oxygen, 1 part. Not only the carbon, but a large part of the hydrogen is thus left free to be oxidized by the oxygen taken in during respiration.

Heat, Cold, and State of Atmosphere.—Two of the most prolific disturbers of our perfect and therefore healthy life, are heat and cold, in relation to which it has been said that “heat is life, and cold, death.” This proverb, however, is only true in regard to the former of these agents in a very limited extent, for, as everyone knows, excessive heat is quite as fatal to animal vitality as excessive cold. These enemies of our well-being are so virulent and sleepless in action that they may be regarded as active causes of disease; the injurious effects of the deprivation of light upon vitality are also well known, and how the absence of the sun’s light and warmth for any lengthened period acts adversely on the general health and spirits of individuals of every age and condition.

The influence of electrical states of the atmosphere upon the human system is by no means definitely understood, although there is little doubt that it is considerable in amount. In disease, and especially in neuralgic affections, the baneful effects of electrical disturbances in the atmosphere during storms is well marked, and many cases of mental depression, not amounting to insanity, are doubtless modified for better or for worse by electrical conditions surrounding the individuals.

The effects of impure air, impure water, and contagion, including epidemic influence and malaria, as causes of disease, have either been already treated of, or will be considered in subsequent articles; and it therefore only remains for us to notice, in this place, a few of the remaining influences which disturb our health.

Heat, Influence of.—With regard to the influence of heat on the human system, we have to bear in mind that exposure to intense heat especially, but necessarily that from the direct rays of the sun, is liable to produce sunstroke. The faintness, giddiness, and insensibility have been shown, by ingenious experiments, to be the immediate effect of heat upon the brain surface; and in order to avoid this enemy of health and long life, exposure to the sun’s rays in very hot weather should be abstained from. Wearing a wet handkerchief or sponge, or even a handful of green leaves, in the crown of the hat, is a useful precaution against sunstroke; and when slight giddiness or weakness, with heat about the head, comes on, and indicates an approaching attack of serious character, the patient should be at once removed to a cool, shady place, and the head and neck and chest gently rubbed with small pieces of ice, so as to reduce the temperature to the natural degree of 98·4 Fahrenheit.

Persons with delicate skins soon learn to save their face and hands from being blistered in the sun by exercising the wisdom of the adage, “A burnt child dreads the fire.”

Upon infants and young children summer heat is very apt to exert an unfavourable effect in promoting diarrhoea and cholera infantum. Of course other causes come into play and aggravate the evil; but there is little doubt that a week when the daily temperature stands very high out-herods Herod as a slayer of the innocents.

Heat of Body Reduced by Perspiration.—The sagacity of Franklin led him to the first discovery of the use of perspiration in reducing the heat of the body, and to point out the analogy subsisting between this process and that of the evaporation of water from a rough, porous surface, so constantly resorted to in the East and West Indies, and other warm countries, as an efficacious means of reducing the temperature of the air in rooms, and of wine and other drinks, much below that of the surrounding atmosphere. The quantity of fluid evapor-

ated from the skin during profuse sweat so far exceeds that given out during the highest insensible perspiration that two pounds in weight have been lost by this means in a couple of hours—an amount evidently sufficient to carry off the largest quantity of superfluous animal heat which can ever be present. In the performance of this function the skin is, indeed, assisted by the exhalation from the lungs; but as both act on the same principle, the explanation is not affected by this circumstance. In very warm weather the dog is always seen with the tongue lolling out of his mouth, and copiously covered with frothy secretion. This is merely another modification of the means used for reducing animal heat. The dog perspires very little from its skin, and the copious exhalation from the mouth is the expedient resorted to by Nature for supplying its place.

Hectic Fever.—Hectic fever is that fever which so generally arises in consequence of some very severe or incurable local disease of a vital part, as the lungs, heart, stomach, etc., or of a common part, when of some magnitude. This fever is well marked in the last stage of consumption. In these cases it is a symptomatic affection, produced by the constitution's sympathizing with a local irritation, which it is incapable of overcoming, and this is its most common course and character. But it is now and then an original disease, the constitution falling into the same mode of action without any local cause whatever—at least, that we know of.

Hectic Fever, Symptoms of.—

The general symptoms are those of a slow fever, attended with weakness. The particular symptoms are debility; a small, quick, sharp pulse; loss of appetite; pallid countenance; wasting; a great readiness to be thrown into sweats; sweating spontaneously when in bed; generally a red deposit in the urine. The chief increase of this fever commences about five o'clock in the afternoon, often with slight chills, which gene-

rally continue for some time after the skin, to the feeling of another person, is warmer than natural. This increase continues till after midnight, the pulse being seldom under 110, and often above it. About one or two o'clock in the morning a sweat appears, which often becomes profuse, and is chiefly on the upper parts of the body. The perspiration relieves the feverish symptoms, and as the morning advances, the remission becomes more distinct. In some cases this remission continues till about five o'clock in the afternoon, when the increase again commences; in other instances there is a slight increase about noon.

Hectic Fever, Treatment of.—

When the disease is evidently symptomatic, the object is to cure, or, if incurable, to remove, when this can be accomplished, the part affected. When original, we must combat the existing irritability; and, above all things, endeavour to strengthen without increasing the action of the system. The vegetable and mineral acids appear to be the best sedatives, as well as tonics, in hectic fever, and it is owing to these properties that they are often of so much value in pulmonary consumption. They abate the feverish heat, diminish the restlessness, and frequently succeed in checking the night sweats. The vegetable acids can be taken in larger quantities than the mineral, and are therefore frequently preferable, especially lemon, lime, or orange juice, and distilled vinegar. If the patient is tormented with pains in the limbs, resembling rheumatism, the acids should be combined with opium and a bitter tonic.

Height in Relation to Weight.

—Within the past few years public attention has been drawn to the fact that weight is as important an indication of the general condition of the human body as any other evidence, and many physicians make a practice of weighing their patients periodically. The habit of being weighed has become almost an amusement, and in railway stations, shops, and many places of recreation, weigh-

ing machines are to be seen in constant request, and little cards, inscribed with the "correct weight," are in the possession of most persons we see. To know the correct weight of any person without reference to height is of very little use; so considerable pains have been taken to frame a standard which should indicate the proportion which weight should have to height. Considerable attention was given to the subject by Dr. John Hutchinson, who collected the height and weight of upwards of 5,000 persons. This list, however, included persons who exhibited themselves as giants and dwarfs, and other exceptional cases. He, therefore, reduced his instances to 2,650 persons, all of whom were men in the prime and vigour of life, and included sailors, soldiers, firemen, policemen, draymen, gentlemen, paupers, and pugilists. This group of cases was intended to make one class a set-off against another, so as to get a fair average. The following is the result of Dr. Hutchinson's observations:—

Height. ft. in.	Weight. st. lbs.
5 1.	8 8
5 2.	9 0
5 3.	9 7
5 4.	9 13
5 5.	10 2
5 6.	10 5
5 7.	10 8
5 8.	11 1
5 9.	11 8
5 10.	12 1
5 11.	12 6
6 0.	12 10

Of course the result of these observations can only be considered as approximate, but they are sufficient to show that among a set of healthy men there is a healthy standard of height and weight.

Hemiplegia (*Gr.* hem'i, half; pleg'e, stroke).—Among the various distortions to which parts of the human body are subject, the simplest, perhaps, is that which is known as hemiplegia or "drawn

mouth." It arises in this way: In consequence of an extravasation of blood, or some other cause, the functions of one side of the brain are interrupted; the muscles of the cheek on the same side, deriving their nerves from that part of the brain, are paralyzed, and the retractors of the opposite angle of the mouth, being no longer balanced by an equal force, draw it up towards their origin, and retain it in that position.

Hemlock Poultrice.—See POULTICES.

Hemp.—In the East hemp is very largely used as a narcotic indulgence. In the plains of India it is consumed in every form, and it is cultivated for smoking on the slopes of the Himalayas as high up as the valleys of Sikkim. In Persia, in the East of Europe, and in Mohammedan countries it is in extensive use. In Northern Africa it is largely employed by the Moors. In central and tropical Africa it is almost everywhere known as a powerful medicine and an agreeable indulgence.

The effects of hemp on the system are generally very agreeable. The narcotic is affectionately spoken of in India as the increaser of pleasure, the exciter of desire, the cementer of friendship, the laughter-mover, and the causer of the reeling gait—all epithets indicating its peculiar effects. A medical man in India, Dr. O'Shaughnessy, has made a study of the effects of the *churrus*, or natural resin of hemp. He says that, when taken in moderation, it produces appetite and great mental cheerfulness, whilst, partaken of to excess, it causes a peculiar kind of delirium and catalepsy. With reference to this latter state the following may be quoted:—

"At two p.m. a grain of the resin of hemp was given to a rheumatic patient; at four p.m. he was very talkative, sang, called loudly for an extra supply of food, and declared himself in perfect health. At six p.m. he was asleep. At eight p.m. he was found insensible, but breathing

with perfect regularity. His pulse and skin were natural, and the pupils freely contracted on the approach of light. Happening by chance to lift up the patient's arm, the professional reader will judge of my astonishment when I found it remained in the posture in which I placed it. It required but a very brief examination of the limbs to find that, by the influence of this narcotic, the patient had been thrown into the strangest and most extraordinary of all nervous conditions, which so few have seen, and the existence of which so many still discredit—the genuine catalepsy of the nosologist. We raised him to a sitting posture, and placed his arms and limbs in every imaginable attitude. A waxen figure could not be more pliant or more stationary in each position, no matter how contrary to the natural influence of gravity on the part! To all impressions he was meanwhile almost insensible."

This extraordinary power, Dr. O'Shaughnessy subsequently discovered, was exercised by the hemp extract on other animals as well as on man. It appears to pass away after a time, leaving the patient quite uninjured.

Hen.—This is the principal of the galinaceous fowls used in diet, and is reckoned the most tender and least alkaliescent of all animal food. Thus the flesh of the young, or the chicken about three months old, is allowed to invalids when the irritation of all other animal food would prove hurtful. Its flesh is white and delicate, it sits easy on the most weak and delicate stomachs. The effect of age on the flesh of this animal is very striking, for after a year old it becomes tougher and more insoluble. The cock is only used after that period for making broth or soup. The difference also of sex, after a year, is equally remarkable, for before this period the cock and hen eat equally well. Much difference arises also from castration; the capon and pullet are the most delicate of all dishes, and preserve the flavour of the chicken with the maturity of age. They yield a rich good chyle with-

out any tendency to heat, being much like that of the chicken, but richer and of a better flavour.

Hernia (*Lat. hernia*).—By the term *hernia* is meant any protrusion of the contents of a cavity through its walls. But in general the term is applied to the protrusion of the abdominal viscera, constituting rupture. The predisposing cause of hernia is a weakness in the walls of the abdomen. The exciting cause is compression of the contents of the abdomen by the surrounding muscles, which are very powerful, and are brought into violent action by rowing, lifting weights, pulling, etc. Hernia is divided into the following varieties—reducible, irreducible, and strangulated.

Hernia, Irreducible.—By the term irreducible is meant that form of rupture where, from some impediment in the canal through which it passes, it cannot be replaced in the abdominal cavity. If an irreducible hernia be neglected, it produces many inconveniences, abdominal pains, vomiting, and general intestinal disturbance, and the contents of the bowel may be obstructed in their natural passage, causing colic and constipation, and, moreover, the chance of the bowel becoming strangulated at that point is greatly enhanced.

Hernia, Irreducible, Treatment of.—The treatment of irreducible hernia must be either palliative or radical; the palliative measures being the application of a *bag truss*, and all violent exertion or excess in diet should be avoided. The *radical* proceedings, which have been before alluded to, are, of course, only to be attempted by an experienced surgeon.

Hernia, Reducible.—By reducible hernia is meant one returnable into the abdominal cavity; and its symptoms are the existence of a compressible tumour in the abdominal walls, which lessens in size if the patient lies down, or disappears altogether, receives an impulse on coughing or

on any exertion being made, and can be readily returned by pressure.

Hernia, Reducible, Treatment of.—This form of hernia can be treated either palliatively or radically: the first by means of trusses, and the second by operations for the closure of the aperture through which the rupture passes.

Hernia, Strangulated.—By the term strangulated hernia is meant that a portion of intestine being protruded, there is a total stoppage of its contents, so that they cannot be propelled towards their natural outlet, and, moreover, that the structure of the bowel itself is so constricted that it is itself *strangulated*.

Hernia, Strangulated, Symptoms of.—The symptoms of this condition are—firstly, those of obstruction of the bowels; secondly, those of inflammation. The individual has flatulency, tightness over the belly, a desire to evacuate the bowels, and an inability to do so. Next, vomiting supervenes, in the first place of the contents of the stomach, of bilious matter, and then of matters smelling strongly of fæces, in consequence of the ingesta being detained in the intestinal circuit.

Hernia, Strangulated, Treatment of.—When a patient is found to be suffering from this variety of hernia operative interference is necessary, and that at once; although, until such aid is at hand, some assistance is to be derived from what is termed taxis, from which, even in unprofessional hands, if properly directed, good results may ensue. The patient should be placed in a warm bath, and both the thighs be raised towards the belly and placed close to each other, as a means of relaxing all the muscles and ligaments connected with the abdomen: he should be engaged, if possible, in conversation, so as to relax the respiratory muscles. Next the visible tumour should be grasped gently with one hand to empty it as far as possible, and with the

other the neck of the tumour should be *kneaded*, with a motion towards the abdomen. This operation should be continued for some time, a quarter of an hour or so, if no great pain is produced by so doing, at the end of which time, if the proceeding be successful, a slight gurgling sound will intimate the return of at least a portion of the tissue. In some instances, raising the pelvis and lowering the shoulders have proved effectual. Chloroform is a great aid in the reduction of such a hernia, a hot bath (96°—100° Fahr.), a large dose of opium, an enema of tobacco, a drachm to a pint of boiling water; cold, in the form of ice, or of a freezing mixture placed in a pig's bladder, and applied over the swelling. In the event of these milder remedies failing, a surgeon must perform an operation to relieve the constriction.

Hernia, Umbilical.—Umbilical hernia, or *exomphalos*, is most frequent in newly born children, and presents itself as a protrusion at the navel. A flat disk of metal, or even a penny piece, retained against the protrusion with a strap of plaster will retain the hernia.

Hernia, Ventral.—Ventral hernia is a protrusion of bowel through the abdominal walls in the mesial line, or through any parts of the *parietes* which are not usually the seat of otherwise named hernia. There are several other forms of herniæ which protrude themselves through those natural openings in the pelvic or abdominal walls, which serve to transmit muscles, vessels, and nerves to the limbs; and for these the reader must be referred to special works on surgery.

Herrings.—The Western Isles and the coast of Norfolk are the chief situations for the herring fishery. They are of an oily, succulent, nutritious nature, and form a principal article of provision in many parts of Great Britain for the greater part of the year, particularly in the northern parts. This fish is remarkable for being less tenacious of

life than most others; for as soon as it is taken out of the water it dies. It is used as food in three different states: either fresh, white pickled, or red pickled. Of the white pickled, the Dutch are the most esteemed: they should be fat, fleshy, firm, and white. Their superiority depends on their being cured the same day they are taken. The red kind are prepared by depositing them in brine twenty-four hours; after which they are taken out, and strung up, so as to be exposed to the smoke of a chimney. In small quantities, the salt herring stimulates the stomach and creates appetite, at the same time destroying any viscid slime that is upon it. Herrings are full of roe at the end of June, at which time they are fat, soft, and delicate. They should be dressed and eaten the moment they are caught. The best are white, thick, and short. In their heating quality they nearly resemble salmon; they quicken the pulse to a considerable degree, and also produce in some constitutions efflorescence. The luminous appearance of this fish at night is more remarkable than in most others.

Herpes (*Lat. herpes*; from *Gr. herpo*, I creep).—This form of skin eruption is also known as “shingles,” or “water-blisters.” It is less common than acne, eczema, and other affections of the kind, which together make up about three-quarters of all the cases of skin diseases presenting themselves for treatment. The older definition of *herpes* related to an eruption which crept or increased peripherically, and the term has in former times been applied to a number of eruptions. It is now restricted to a single form of skin disease, namely, one characterized by the presence of flat vesicles, generally grouped together in a peculiar way.

Herpes, Symptoms of.—The most common variety of this disorder is what is known as *herpes zoster*, *zona*, or “shingles”; also as *ignis sacer*, or *zona ignea*. In this the disease is limited to one side of the body, extending horizontally from the middle line

behind to the middle line in front, and consists of groups of flattened vesicles, with a certain amount of redness and tenderness of the skin between. Sometimes, when this attacks the region of the arms or legs, it runs down the limb; on the head it may occur over the eye, or about one ear, or on one side of the neck.

The eruption is attended with very considerable pain in many cases, especially in older subjects. Some cases, formerly or wrongly called “erysipelas” of the head or face, are now known to be this affection.

The causes of this acute inflammation of the nerve-trunk and the resulting inflammation of the skin are not always determined. Generally the exciting cause is cold; but, strange to say, it is extremely common for a person to have this eruption a second time.

There is a popular impression that if the shingles should encircle the whole body, the patient would die. This is based on the fact that the eruption never does and *never* can encircle the body, if, as is almost always the case, there is a single nerve-tract affected.

Herpes, Treatment of.—The treatment of these cases is always medical. The only suggestion to be made is to avoid irritation, and also to avoid poulticing the sores.

Hiccup.—This consists of a short, abrupt contraction of the diaphragm, and a sudden, jerking, imperfect ejection of the breath. Most frequently it is purely emotional, and brought on no one knows how, and very often it may be got rid of in the same way by frightening the individual, by exciting the curiosity, and so removing the attention from the hiccup. A draught of cold water or sucking a piece of ice will generally get rid of this nervous form of the affection.

A writer in a leading periodical recently related how, while dining at a friend's house, one of the party was attacked with hiccup, which was cured in a novel way. A knife

was put into a glass of cold water, and then he was told to drink a drop or two of the water slowly, looking at the same time at the point of the knife under the water. The cure was immediate.

A variety of hiccup is not uncommon in hysteria, when it may continue for a very long time, apparently resisting every remedy. The application of the galvanic battery to the region of the diaphragm will in most cases put a stop to this hysterical kind. There is a form of very grave origin, however, when gangrene of any part sets in, but especially gangrene or mortification of the gut. This proves very troublesome, and in some instances it is a fatal symptom.

Hints to Nurses.—See NURSES, HINTS TO.

Hip-bath.—When it is wished to act upon those organs which are contained in the pelvis, the hip-bath is made use of. In order that the patient may be able to sit in the bath with comfort, it should be provided with a back. These baths are generally used hot or cold according to the effect that is wished to be produced, and the quantity of water employed should fill little more than one-third of the bath, as it might otherwise overflow on the patient sitting down. When this bath is made use of for the purpose of relieving pain, the temperature of the water should not exceed 90° Fahr., and the patient may remain in it for half an hour; but when used to increase the activity of the womb, when the monthly discharge is defective, it should be employed as hot as the patient can bear it; but the time during which the patient should be in the bath ought not to exceed ten minutes or a quarter of an hour. The best time to employ this bath is in the evening, just before the patient retires to rest.

Hip, Dislocation of.—The head of the thigh-bone may be dislocated in four different directions, viz., upwards and backwards, on the *ilium*; downwards, into the *foramen ovale*; forwards on the *pubis*; and backwards, on the *ischiatric notch*.

Hip, Dislocation of, Backwards.—In this case, the head of the thigh-bone is placed behind its natural cavity, and a little above its middle; the limb is generally not more than half an inch shorter than its fellow; the knee and foot are turned inwards, but not nearly in so great a degree as in the first kind of dislocation; the thigh inclines a little forward; the knee is slightly bent; and the limb is so fixed that flexion and rotation are in a great measure prevented.

Hip, Dislocation of, Backwards, Treatment of.—The pelvis being fixed, the extension is to be made downwards and forwards, across the middle of the other thigh, so as to dislodge the head of the bone, while the operator, with a napkin placed under the upper part of the thigh, just below the trochanter minor, pulls the upper part of the thigh-bone towards its proper cavity. In this case, pulleys are preferable for making the extension.

Hip, Dislocation of, Downwards.—This is next in frequency to the preceding dislocation. Here the injured limb is two inches longer than its fellow; the thigh is flattened; a hard, round tumour, formed by the head of the thigh-bone, is felt at the inner and superior part of the thigh; and the knees are widely separated from each other. In this instance (Fig. 1) the head of the bone occupies the obturator foramen. The symptoms of this dislocation are lengthening of the limb with pointing of the foot downwards.

Hip, Dislocation of, Downwards, Treatment of.—This kind of laxation is very easy of reduction. The pelvis having been fixed, as above described, the necessary extension is to be made downwards and outwards, so as to dislodge the head of the bone. The muscles then generally draw it into its natural cavity, on the extending force being gradually relaxed, if the upper part of the bone be pulled outward, with a bandage, and an assistant at the same instant inclines the ankle inwards.

Then the limb is used as a lever, with very considerable power. Manipulation may be tried as in the former case, only rotation must be made *inwards*, instead of outwards.

Hip, Dislocation of, Forwards.

—The thigh-bone is occasionally dislocated forwards, or upwards and forwards on the pubis, when the whole limb is turned out-

Hip, Dislocation of, Forwards, Treatment of.

—The treatment of this injury only differs from that just described in the extension being made in a line behind the axis of the body, so as to draw the thigh-bone backwards; and when such extension has been continued for some time, a napkin is to be put under the upper part of the bone, and its head lifted over the edge



FIG. 4.—UPWARD AND BACKWARD DISLOCATION OF THE HIP.

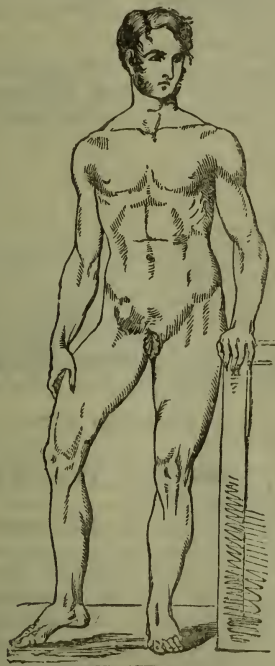


FIG. 1.—DOWNWARD DISLOCATION OF THE HIP.

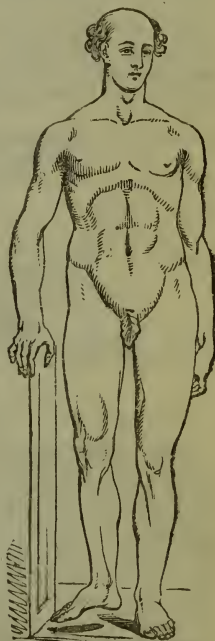


FIG. 2.—FORWARD AND UPWARD DISLOCATION OF THE HIP.

wards, and cannot be rotated inwards; it is shortened by one inch; the head of the bone forms a tumour high in the groin; and the knee is generally carried backwards. In this instance (Fig. 2) the head of the bone rests upon the pubis. There is shortening of the limb; the foot and knee are turned out, and the head of the bone can be felt upon the pubis.

of the cavity into which it is to go. In this form of dislocation the head of the thigh-bone is resting upon the pubis, and to reduce it the patient requires to be placed on his back with his leg extended in a downwards and backwards direction (Fig. 3). Counter-extension is kept up by means of a band placed between the thigh and perineum,

Hip, Dislocation of, Upwards and Backwards.—In this case the limb is from one inch and a half to two inches and a half shorter than its fellow; the thigh a little bent, and carried inwards; the knee inclines more forwards and inwards than the opposite one; the leg and thigh are turned inwards; the foot cannot be turned outwards; and the natural roundness of the hip has disappeared. In this form of dislocation (Fig. 4) the head of the thigh-bone is driven upwards and backwards upon the dorsum of the ilium. The knee and foot are turned inwards, and the toes rest on the upper part of the tarsus of the opposite foot.



FIG. 3.—REDUCTION OF DISLOCATION OF THE HIP, FORWARDS.

Hip, Dislocation of, Upwards and Backwards, Treatment of.—

The body of the patient must be first fixed by passing a strong belt or roller, etc., round the pelvis or hips, the ends being carried over the hip of the sound side, where they are either to be firmly held by assistants, or confined to some immovable body. A second belt is to encircle the dislocated thigh-bone, immediately above the knee, and with this extension is to be made in the direction of the line taken by the limb, when it is brought across the other thigh a little above the knee. As soon as the head of the bone has been brought on a level with the cavity into which it is to be returned, by the assistants, who are making the extension, the surgeon is to force it into the cavity by pressing on the large protuberance of the bone, called trochanter, which

every one feels on putting their hand on the side of the hip; or the knee and foot may at this period be gently rotated outwards. A more simple method may be tried in the first instance, viz., bending the leg upon the thigh and the thigh upon the abdomen, rotate outwards and extend, when the head of the bone may be brought into its socket.

Hives.—See URTICARIA.

Hippocrates' Mode of Preventing Disease.—See DISEASE, HIPPOCRATES' MODE OF PREVENTING.

Hog, Wild.—See PORK.

Hollands.—Hollands and gin consist of alcohol, or spirits, in a diluted state, flavoured with the berry of the juniper, which possesses certain medicinal properties, which may sometimes render these spirits useful. Yet this is more often urged as a merely frivolous protest, than as a valid plea for their employment. It is commonly believed that ingredients of an injurious tendency are substituted for the juniper berry in the manufacture of gin; and the impaired health produced by it is ascribed to them rather than to the true cause, namely, the essential properties of the spirit "Gin," says one writer, "is called cream of the valley"—a name which would answer very well if the words "of the shadow of death" were added to it.

Home-Made Wines.—See WINES, HOME-MADE.

Home Medicines.—See MEDICINES, HOME.

Homœopathy Defined.—In a work in which it is sought to give information on every branch of Household Medicine and Surgical Treatment, and in which even the treatment of diseases and their prevention and cure must of necessity be briefly discussed, it is manifest that the important mode and means of medical treatment known as Homœopathy must not be ignored. In order to arrive at a correct idea of what Homœopathy is, it is necessary first of all to ascertain the meaning of the word itself, and to understand why it is used to designate that form of medical practice to which it was applied by the founder of this system of medicine, Dr. Samuel Hahnemann, who first announced his discovery to the medical world in 1796. Theory, generally speaking, forms the basis of practice in every art and science, and in no science is this more perceptible than in the science of medicine. Thus in medical practice it has arisen that there are two great and opposing schools of medicine each of which is based on a widely different theory; that of the ordinary medical practitioner being *Contraria contrariis curantur*, a sentence in Latin which means, when rendered as simply and concisely as possible, "Opposites are cured by opposites"; and that of the homœopathic practitioner, *Similia similibus curantur*, another sentence in Latin which means "Likes are cured by likes." Going a little deeper into the matter, the first of these sentences implies, that in the treatment of any disease, be it what it may, drugs should be used which will produce in the body of the patient a condition *opposite* to that induced by the disease to be cured, or in other words, that it is needful to counteract the disease and arrest its progress by the administration of medicines that will produce effects different from those resulting from the disease itself. The second, on the contrary, implies

that in the treatment of any disease, be it what it may, drugs should be used which would produce in a healthy person symptoms resembling or *like* to those occasioned by the disease by which the patient is affected. Hence Hahnemann was led to apply to the generally accepted mode of medical treatment the term ALLOPATHY, from two Greek words, *allos*, another, and *pathos*, suffering; and to his own method the term HOMŒOPATHY, also from two Greek words, *homoios*, similar or like, and *pathos*, suffering. Thus Allopathy, to be perfectly clear and plain even at the risk of repetition, implies that mode of medical practice which consists in using drugs to produce in the body a condition opposite to the disease to be cured, and which has been considered in this work under the names of the various illnesses; and Homœopathy a mode of treating diseases by the administration of medicines capable of exciting in healthy persons symptoms closely similar to those of the disease for which they are given.

Homœopathic Medicines, Preparation of.—See PREPARATION OF HOMŒOPATHIC MEDICINES.

Homœopathic Treatment of Diseases.—The utmost that can be done here in connection with this subject is to enumerate in alphabetical order a few of the most common ailments that man meets with, and briefly indicate the treatment that they require and the medicines that are employed to counteract them.—See APPETITE, FAILURE OF; BILIOUSNESS; BRUISES; CATARRH, OR COLD IN THE HEAD; COLIC, OR PAIN IN THE BOWELS; CONSTIPATION; COUGH; DIARRHŒA; FEVER; HEADACHE; INDIGESTION, HOMŒOPATHIC TREATMENT OF.

Homœopathy, Advantages of.—See ADVANTAGES OF HOMŒOPATHY.

Homœopathy, Diet in.—See DIET IN HOMŒOPATHY.

Homœopathy, Practice of.—See PRACTICE OF HOMŒOPATHY.

Homœopathy, Principle of.—

See PRINCIPLE OF HOMŒOPATHY.

Homœopathy, Medicines Used

in.—See MEDICINES USED IN HOMŒOPATHY.

Honey.—Honey is evidently little else than a collection of sugar furnished by a secretion in different plants. It must therefore be regarded rather as a vegetable than as an animal production; and, although decidedly loathed by many persons, is perhaps one of the most wholesome forms of sugar. Honey is nutritive, and to those who take much exercise abroad is sufficiently digestible and wholesome, if used moderately. If more than a small quantity be taken, it is apt, like all other sweet things, to cloy the stomach. Sir John Pringle used to recommend it very strongly, and considered it worthy of being called the juice of long life; but this was going much too far. It ought never to be eaten without bread. Honey, it must be said, is sometimes poisonous owing to the flowers on which the bees feed.

Hope.—This passion is a modification of joy; or, properly, joy by anticipation. It is real joy without alloy, and alloy is too often mixed with happiness when the actual event or good, which gives rise to happiness, comes. Hope, then, is the most pleasing state the mind can be in, and is highly favourable to health. It tells always, in the language of the poet, "a flattering tale," and paints the image, not as it is, but as it ought to be. Its beneficial influence on the body has been evinced in numberless cases, when it has produced a serenity of thought and tended to prolong existence even in the most forlorn situations. It may be said to be that passion, or affection of the mind, which is the latest to leave us, and which continues to linger with us to the extinction of the vital spark on this side of the grave, and to point out, even before this event is completed, the scene that is expected beyond it. Hence it conveys, more than any other of our passions, an idea of

The divinity that stirs within us,
And points out immortality to man.

Hail! thou best feeling of our nature;
mayest thou never, in this scene of vicissitude, forsake us!

Hope has great influence on man when labouring under bodily disorder, whether of an acute or chronic character, since its effects are diametrically opposite to those produced by fear. It exhilarates the spirits, and augments the energy of the heart and nervous system; moderates the pulse; renders the respiration fuller and freer, and accelerates the secretions. It is, consequently, found of great service in all disorders to excite hope in the mind of the patient by all proper means.

Hops.—Hops are the flowers of the cultivated hop plant collected and dried. The flowers consist of scales enclosing a quantity of powder, to which they owe their peculiar effects. This powder may be separated by sifting, and is then called lupulin. Various preparations of hops are in use—the tincture, the extract, and the infusion; the best



THE HOP.

is, however, bitter beer. The hops themselves are supposed to be slightly narcotic, and a pillow of hops has been used to give sleep, but there is no evidence whatever to show that any preparation of hops has this particular effect. Hops are, besides, bitter,

stomachic, and tonic, and this wholesome bitter in good bitter beer is often invaluable. Much of the beer used, however, owes its bitter to something else than the hop, and in many instances that something is not quite so wholesome.

Hordeolum.—See BOILS.

Horse-Radish.—This plant, whose scientific name is *Cochlearia armoracea*, is well known for its culinary virtues, though not much can be said for its medicinal properties. It is sharply pungent, and will act as a stimulant to the flow of saliva, probably also to that of gastric juice. Its only officinal preparation is a compound spirit, which is rarely, if ever, used. It is best taken scraped with roast sirloin of beef. On account of the great volatility of its oil, horse-radish should never be preserved by drying, but should be kept moist by being buried in the earth. So rapidly does its volatile oil evaporate, that even when scraped for the table it almost immediately spoils by exposure to the air.

The poisonous roots of aconite, *Aconitum napellus*, popularly known as monk's-hood or wolf's-bane, have sometimes been mistaken for those of horse-radish. The root of the monk's-hood is darker and more fibrous than that of the horse-radish, and the mistake can only occur through great ignorance or carelessness.

Hot Applications.—The readiest way in many cases to apply heat is by hot-water bottles. Roll them in flannels or thin towels; and should the patient be suffering from shock, or insensible from any cause, and consequently not able to complain, keep a watch against blistering the skin. Bags of sand or salt, bricks, flat-irons, tins, tin plates, etc., are all useful in emergencies to supply heat. Make them very hot, and roll them in towels before applying.

Hot flannels are often applied to the stomach to allay pain. Fold a flannel in a long towel and lay it across a basin; pour

boiling water over it, and then, taking the towel by both ends, wring it as dry as possible. Shake the flannel up a moment to take in air, which will help in keeping the heat, and apply over the part; cover with an oil-silk.

Hot Bath.—This bath should not be employed unnecessarily, as harm may result from its use. Its action is that of a powerful stimulant, increasing the force and rapidity of the circulation and causing copious perspiration. It should not be used in cases of heart disease, or where there is any tendency to fainting. It is useful in cases of kidney disease and diseases of the liver. The period of immersion had better not exceed a quarter of an hour, lest exhaustion should result.

Hot baths, by which are meant those of a temperature of from 85° to 105° Fahrenheit, are chiefly used in the treatment of diseases as powerful stimulants. Every parent should remember, however, that a hot bath, causing free perspiration, promoted by wrapping up warm in bed with blankets, will often save children and adults severe attacks of illness, if promptly resorted to after exposure to cold or wet.

Hot Douche Bath.—The object of this bath is to combine heat and percussion; and this may be accomplished by pouring the water through a narrow tube, so as to cause it to strike forcibly upon the part; at the same time keeping up beating by means of some soft material. The douching may go on for about half an hour at a time, after which the patient should be put to bed and perspiration promoted. This bath is very useful in chronic rheumatism, when the joints have become enlarged and painful.

Hot Water Bottle.—Some persons in cold weather use a hot-water bottle in bed, upon which they put their feet, and by this means restore the circulation which had been previously impeded—a practice we have referred to in the preceding paragraph; but the disadvantage of this process is that

It renders the feet more delicate and sensitive to cold at other times, and when once accustomed to a hot-water bottle, a person cannot sleep without it. There is also the trouble of getting hot water late at night, the weight to be carried upstairs, and the danger of the water leaking out. A much better plan, therefore, is to procure a common earthen tile and, having rubbed the edges smooth, to have a flannel bag made to fit it loosely; then, about an hour before it is wanted, to warm it in the oven, place it in its bag, wrap the bed-dress round it, and put it into the bed. It will contain sufficient heat to warm the sleeper, without injurious effects, and is very portable, cheap, and convenient.

Hours of Labour, Regulation of.—The application of machinery and steam power to the manufacturing arts has made this the richest country in the world. But this wealth was attained, at first, at a cost of human suffering and death which makes a sad page in history.

Recent legislation, however, has been thorough and enlightened, showing upon the part of its authors a degree of humanity, painstaking, and intelligence which goes far to atone for previous sins of neglect. Its provisions are as follows:—

Children under ten shall not be employed in any factory or workshop.

A medical certificate is required, in the case of all persons under sixteen, of the fitness of such persons for employment in the factory specified. The employer procures this certificate and is responsible for proving the age. The Government Inspector may require a certificate, if a person under sixteen seems to him unfit, and may forbid his working again until recertified by the certifying surgeon. The examination is made at the factory. Refusal to give a certificate must be accompanied by written reasons.

Persons under fourteen shall not be employed on Sunday in workshops or factories. Christmas, Good Friday, and eight half-holidays besides, are given.

Children are employed (under fourteen) under one of two plans:—(a) in alternate sets, morning and afternoon; (b) on alternate days. The morning work ends at 1, or at dinner if earlier. The afternoon work begins at 1, or after dinner if later. The day is twelve hours long, viz.: from 6 to 6 or 7 to 7, for children, young persons, and women, with one hour and a half for meals. On Saturday the day ends at 2 o'clock.

Children must not be employed more than five hours continuously without a meal (half-hour). All must eat at the same hour (children, young persons under eighteen, and women), and never where work is going on.

Every child under fourteen in a factory or workshop must attend a school, either on the alternate off-days or on the half-days when off work. If he fails to attend in any week, he shall not re-commence work the next week until he has made up his absence from school. The employer obtains certificate of attendance.

The parent selects the school. Proficiency in the elementary studies, which satisfies a certain standard fixed by Government, enables a child at thirteen to work as if over fourteen—as a young person.

The school is authorized to collect its fees from the occupier of the factory, to a certain extent, the amount to be deducted from the child's wages.

There is in modern labour a tendency to aggregate persons and resources in great masses, which produces town life, large enterprises and great factories. In many ways this is to be deplored; but it is right to see the bright side also. The old system of independent workshops, where the weaver or other mechanical toiler spent all the time he could possibly give in small crowded shops, often in his own room, in narrow and nasty quarters at the best, has given way to the system of large establishments, which are run for a much smaller number of hours, are far better lighted and warmed and aired, and, what is perhaps the root of the whole matter, are much more accessible

to the control of public opinion and to legislative inspection.

Hours per Day, How many, for Intellectual Work.—See INTELLECTUAL WORK, HOW MANY HOURS A DAY FOR.

House, Choice of.—See CHOICE OF HOUSE.

House, Choice of Site for.—See SITE FOR HOUSE, CHOICE OF.

House, Heating The.—Contrivances such as Galton's stoves and Saxon Snell's apparatus, which provide for the admission of warmed air into the room, and so utilize a great deal of the heat that would be lost with the ordinary fireplace, are much to be recommended. Slow combustion stoves made of cast-iron, in which coke is consumed, are not suitable for dwelling-rooms, even when air is admitted into the room through them. They dry the air too much, and also cause an unpleasant smell from the partial burning of the organic matter in the air. Although the products of combustion of most lights must be allowed to escape into the air of a room, those of gas should be conveyed away by pipes made for the purpose, which may also be made to serve as extractors of air. Gas should be much more used for heating and cooking purposes than it is at present, and gas companies would do well to let out cooking-stoves, at any rate, on hire, in the same way that they do meters. This is the practice in some Continental cities. The way in which we use coal in our fireplaces, thus destroying all the valuable substances—tar, carbolic acid, ammonia, the aniline colours, etc., that are prepared from the residues of the manufacture of gas—is obviously absurd. Where several gas-stoves are used, however, it is necessary to have a special supply pipe.

There should be a thermometer on the outside and inside of every regularly occupied room; on the inside five feet from the floor, to give some idea of what the com-

fortable warmth is to the occupant. The difference between in- and out-door air is often thirty or forty degrees or more; and a person not knowing this fails to provide extra dress, becomes chilled, and the next thing is a hoarseness or bad cold, or sore throat, if not pleurisy or some form of lung disease, rheumatism, asthma, or influenza, which may be an annoyance for weeks, or even months.

During the winter months the temperature of passages, staircases, and bedrooms not specially warmed will range from 50° down to 40°, and even much lower. At such temperature out of doors, and while in active exercise, men put on their overcoats and thick gloves, women wear warm cloaks and furs. At these temperatures indoors we go shivering in thin clothing, change the warm for the cold, and allow children to run about more nearly naked than they would do in the warmer climate of France in August. It is as if a whole section of the population were training for an Arctic voyage, although they may be confident that the vast majority of them, all except the idle, the extravagant, and the unfortunate, will be more able to keep themselves in comfort as time goes on. Victims of this infatuation plead that they were always taught when young to harden themselves, and to avoid "coddling" in the house. But the ancestors of these townsfolk were countrymen, sportsmen, Highlanders, tillers of the soil, who lived out of doors, and would have despised our sedentary habits, small fires, and evening dress. Now the middle, or perhaps the middling, class stands alone in doing these things, for neither the rich nor the poor submit to them. The former try to warm their houses throughout, making every part habitable; the latter spend a large part of their money on the fire, papering up every hole and crevice, and almost stifling themselves, not, as is absurdly said, because they hate fresh air, but because they hate draughts.

House, How to Keep Healthy.
—Intelligent supervision of the work of the

servants from garret to cellar is the only thing which will insure a healthy house.

1. *Cellars* must be ventilated with open windows; must be perfectly dry, flagged, or cemented; must be from time to time whitewashed, the walls being first well-brushed and freed from the coal-dust and ashes which are sure to collect upon them. No accumulations of rubbish must be allowed in them, and no turnips, cabbage, or other strong-smelling vegetables be left uncovered or perhaps rotting on the cellar floor.

2. *Kitchens* should be scrubbed or white-washed all over; but besides this, the sink and all the drain-pipes need to be flushed daily with clean hot water, and once a month at least to have strong disinfectants poured down them. The washings from vegetables and meat, the greasy and decomposing particles which float down the pipes and line their surface, become constant sources of danger, and were it not for the fact that the constant fire keeps the ventilation good, there would be many cases of illness caused by foul air from sinks. Servants' quarters need constant looking after, to prevent not only obvious dirt but ill-health and bad smells, which arise from want of ventilation and proper airing of bedding and mattresses.

3. *Slop-pails*, such as are in ordinary use, are extremely untidy; without great care, they contract an offensive smell and do mischief. Vessels should be carried to the closet and there emptied, or an ordinary china jar with a cover used. Washing-soda dissolved in hot water and left standing in them for a few hours now and then will purify and cleanse them.

4. *Clean Rooms*.—After the weekly sweeping which has distributed the dust from the carpet to all uncovered articles and places, have the walls wiped down with a soft cloth fastened over a broom; dust the backs of the pictures, shake the curtains, wipe the paint with a damp cloth, lift out the registers, and wipe out the dirt from the mouth of the pipes. Never have a carpet which is worth more than sunlight. Let in

air and sun freely. Open windows before breakfast and after all meals, to let out the smells of the cooking.

5. *Stationary tubs*, in which the clothing of the family and of the servant is washed, often give out an offensive odour, unless care is taken to scrub them out clean and to flush the pipes with clean and occasionally with carbolized water. The clothing is filled with impurities which, being floated off by the water, settle down along the waste-pipes and can only be rendered harmless by constant and cleanly use.

What has been said of stationary tubs is also true of stationary basins, bath-tubs, and water-closets. No fixed basins should ever be near a sleeping-room. "There is," says an American writer, "no perfect system of house-drainage, and the chances of leaks and faulty traps are too many to make it safe to run any risks. Besides, were your connections with the street sewer perfect, all the excrements of the family, all the contaminated water from sinks, fixed basins, and wash-tubs constantly leave an unclean and poisonous deposit above traps and beyond traps, thus supplying a ready source of danger. The evils can be overcome, to a certain extent, by the use of disinfectants, and these should be employed even where there is no bad smell. It has been frequently proved that poisonous air may escape into dwelling-houses from house-drains, and yet produce no sort of unpleasant odour.

"If you are so unfortunate as to have near your sleeping-room 'all the modern improvements,' fill up the overflow perforations in the fixed basin with plaster of Paris, renewing it from time to time. Keep the plug always in, and use disinfectants.

"Diphtheria, typhoid fever, dysentery, and other evils lie in wait at the mouth of every drain, and, sooner or later, will find a victim unless there is constant supervision."

A neat, clean, fresh-aired, sweet, cheerful, well-arranged, and well-situated house exercises a moral as well as a physical influence over its inmates, and makes the members of a family peaceable and con-

siderate of the feelings and happiness of each other; the connection is obvious between the state of mind thus produced and habits of respect for others and for those higher duties and obligations which no laws can enforce. On the contrary, a filthy, squalid, noxious dwelling, rendered still more wretched by its noisome site, and in which none of the decencies of life can be observed, contributes to make its unfortunate inhabitants selfish, sensual, and regardless of the feelings of each other; the constant indulgence of such passions renders them reckless and brutal, and then transition is natural to propensities and habits incompatible with a respect for the property of others or for the law.

House, Materials of.—See MATERIALS OF HOUSE.

Household Test for Carbonic Acid.—See CARBONIC ACID, HOUSEHOLD TEST FOR.

Houses, Back to Back.—Houses should always be built, be the plan what it may, so as to admit of through-and-through ventilation. In some parts of the country a horrid plan prevails of building houses back to back, so that the back wall suffices for two streets. Nothing could be more pernicious to health than this, for it is impossible, however desirable, to obtain sufficient ventilation.

Houses, New, Precautions with.—See NEW HOUSES, PRECAUTIONS WITH.

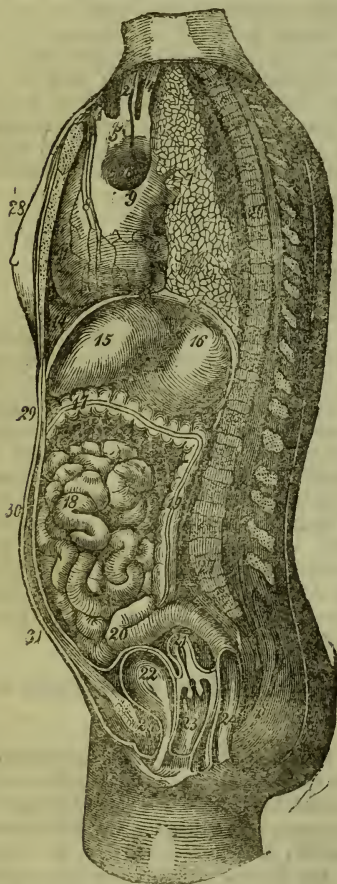
Houses of the Poor.—Those who live in large houses, in the customary enjoyment of all their privacies, says Dr. J. B. Russell, "ought to make an effort to think out in detail how they would feel if their whole life, personal and family, were suddenly to shrink within the limits of a house of one or two apartments; if their refined ideas of delicacy, their virtues of modesty and propriety, their opportunities

of private ablutions, their retirement in times of sickness, in the event of birth or death, were suddenly deprived of the conditions of space which they have come to regard as essential. It is almost too horrible to express in naked, uncompromising language the jostling of birth and death and the functions of life which must be the daily experience of these small houses. If grapes grew and ripened in the slums of our large cities, or the orange and myrtle were as luxurious and plentiful as daisies or thistles in the fields, people would say it was a miracle; and yet we go confidently in search of delicacy and refinement, and heightened morality, amid physical circumstances which are equally inimical to those finer growths and efflorescences of the moral nature of man. Virtue in the individual is to be prized in proportion to the adversity of the conditions under which it has blossomed into life; and therefore I say to those who are virtuous under circumstances which make the task easy, consider the hourly struggle of your less fortunate brethren; and when they have agonized so as to maintain and even bring to perfection 'the white flower of a blameless life,' honour and respect them for it; but above all things do not toss the head of pharisaical disdain at their faults and imperfections."

How Much to Eat.—See EAT, HOW MUCH TO.

Human Body.—The illustration on the following page exhibits a vertical section through the trunk of the human female: 1, the innominate artery; 2, the left common carotid; 4, the left subclavian; 3, is placed in the interval between the left common carotid and left subclavian arteries; 5, the arch of the aorta; 6, the pulmonary artery; 7, the lung; 8, the phrenic nerve; 9, 10, the pulmonary veins; 11, the pericardium; 12, 13, 14, the diaphragm; 15, the liver; 16, the stomach; 17, the transverse colon; 18, the coils of the small intestine; 19, the descending colon; 20, the sigmoid flexure

of the colon; 21, the uterus; 22, the bladder; 23, the vagina; 24, the rectum; 25, the symphysis pubis; 26, 27, the vertebral



VERTICAL SECTION THROUGH TRUNK OF HUMAN FEMALE.

column; 28, the breast; 29, 30, 31, the abdominal walls.

Human Body, Elements of.—*See* ELEMENTS OF HUMAN BODY.

Human Body, Quantity of Blood in.—*See* BLOOD, QUANTITY OF, IN HUMAN BODY.

Human Body, Water in.—*See* WATER IN HUMAN BODY.

Human Brain, Size and Weight of.—The human brain is absolutely bigger and heavier than the brain of any animal, except the elephant and the larger whales. It is also heavier relatively to the bulk and weight of the body than are the brains of the lower animals, except in some small birds and mammals. Considerable variations, however, exist in the size and weight of the human brain, not only in the different races of mankind, but in individuals of the same race and in the two sexes.

The heaviest brains occur in the white races. The average weight of the adult European male brain is 49 to 50 oz., that of the adult female 44 to 45 oz., so that the brain of a man is, on the average, fully 10 per cent. heavier than that of a woman. The greater weight of the brain in man as compared with woman is not in relation merely to his greater bulk, but is a fundamental sexual distinction; for whilst there is a difference of 10 per cent. in the brain weight, the average stature of woman is, as Thurman has calculated, only 8 per cent. less than that of man.

The average weight of the brain in the newly born male infant is 11·67 oz., in the female only 10 oz. The exact age at which the brain reaches its maximum size has been variously placed at from the third to the eighth year by different authors; but it continues to increase in weight to 25 or 30, or even 40. After 60 the brain begins to diminish in weight; in aged males the average weight is about 45 oz., in females about 41 oz.

In some cases the adult brain considerably exceeds the average weight. The brains of several men distinguished for their intellectual attainments have been weighed: the brain of Cuvier weighed 64½ oz.; of Dr. Abercrombie, 63 oz.; of Professor Goodsir,

57½ oz.; of Spurzheim, 55 oz.; of Sir J. Y. Simpson, 54 oz.; of Agassiz, 53·4 oz.; and of Dr. Chalmers, 53 oz. But high brain weights have also been found where there was no evidence of intellectual capacity. High brain weights have been noticed among the insane.

Human Mind, Effect of Music on.—See MUSIC, EFFECT OF, ON HUMAN MIND.

Human Scalp, Number of Hairs on.—See HAIRS, SHEDDING OF.

Human Stature.—There is no fixed law determining invariably the human stature, although there is a standard, as in other species of animals, from which the deviations, independently of disease or accident, are not very considerable in either direction. In the temperate climates of Europe the height of the human race varies from four feet and a half to six feet. Individuals of six feet and some inches are not uncommon in this and other European countries. Occasional instances have been known, in various parts of the world, of men reaching the height of seven, eight, or even nine feet; and ancient and even modern authors speak of the human stature reaching ten, and even eighteen feet. The latter representations are grounded on large bones dug out of the earth. These, together with the common propensity to believe and report what is marvellous, and the notion that mankind have undergone a physical as well as a moral degeneracy since their first formation, have led to a very common belief that the human stature in general is at this period less than it was in remote ages. We are warranted in suspecting the accounts of such great elevation above the ordinary stature in the human species, by observing that Nature, within the time of which we have any authentic records, exhibits no such disproportions in other species. We find, too, that the height of these giants is reduced, as we approach modern times, to what we have opportunities of observing

now, so that we may probably affirm that no sufficiently authenticated example can be adduced of a man higher than eight or nine feet.

It may be remarked that the ordinary size of man is particularly well adapted to his wants and uses, and we generally observe that those individuals who deviate greatly from the common standard, either one way or the other, are neither well proportioned nor healthy. The head in giants is commonly too small for the rest of the body, and in dwarfs too large.

Human Vocal Apparatus.—The human vocal apparatus—lungs, windpipe, larynx, mouth, throat, and nose—may be aptly described as a musical instrument, capable of rendering shades of expression far more delicate than any that can emanate from a musical instrument, “the work of men’s hands.” It is emphatically a reed instrument with bellows (lungs), pipe (windpipe), reed-box (larynx), two flexible reeds (vocal bands), and resonance attachment (throat, mouth, nose). These parts are movable upon themselves and their adjacent structures, and are kept moist and flexible by a bland, lubricating fluid, continuously secreted from the glands of the delicate mucous membrane which covers and protects them.

Humerus (*Lat.* humerus, shoulder).—The humerus, or arm bone is the long cylindrical bone between the shoulder and fore-arm. It is adapted by a kind of ball-and-socket joint to a corresponding surface in the scapula, and hence enjoys great latitude of motion, and, from the shallowness of the receptacle, is somewhat liable to dislocation. It is connected with the fore-arm, composed of the radius and ulna with a hinge-like joint which does not admit of rotation, but which facilitates the bending of the arm or its strengthening, as the case may be, to the fullest possible extent.

Humours of Eye.—The humours of the eye are, first, the aqueous, or watery,

which occupies the anterior chamber and also passes into the posterior. The iris floats in this humour. Immediately behind it we find the crystalline lens, or magnifying lens of the eye. It is a double convex lens, and is placed in the axis of vision, and in front of the next humour of the eye, which is termed the vitreous, or glassy humour; this last is by far the largest in quantity, filling up nearly the whole of the posterior chamber. It is contained in a number of small cells, enclosed in a capsule termed the hyaloid membrane. Brevity has been studied in the description of these parts given here, as the general reader will gain much more by the study of a diagram such as that on page 323 than from any explanations in words.

Humpback.—A deformity occasioned by a protrusion of the vertebræ of the spine between the shoulders, caused by disease which imparts considerable increase to the natural curves of the spine.

Hungarian Wines.—See WINES OF COMMERCE.

Hunger.—Hunger is that natural craving for food produced by certain states of the system, especially of the stomach, digestive, and masticatory organs which returns at intervals, with more or less regularity, according to the peculiar states and circumstances of individuals. The intervals are very short in infancy and childhood, and shorter in women than men. Appetite depends on healthy changes in the system. The body is in a continual state of flux and change, the tissues undergoing metamorphosis continually. Wasted tissues are eliminated in the excretions, and the waste gives rise to want of fresh supplies. This feeling of want is appetite. It is favoured by work, by plain living, by cheerfulness; it is the luxury of the poor, and is often denied to the rich.

The sensation of hunger is, at first, rather agreeable, but it quickly becomes unpleasant if prolonged. The sense of keen appetite is delightful, but that of "sinking in the

stomach," which follows, soon passes from an uneasy sensation into positive pain. The pain soon becomes acute, and, if food be still withheld, we feel as if the stomach were being torn in pieces. This is followed by a state of general exhaustion, feverishness, headache, light-headedness, often flaming into madness.

Besides the usual conditions of recurring appetite, there are some unusual conditions, depending on peculiarities in the individuals or on certain states of the organism. Thus, during convalescence after grave maladies, especially fevers, the appetite is almost incessant, and it is told by Admiral Byron, that after suffering from a month's starvation during a shipwreck, he and his companions, when on shore, were not content with gorging themselves while at table, but filled their pockets, that they might eat during the intervals of meals.

Hydrocele.—See DROPSY.

Hydrocephalus (*Gr.* hu'dor, water; keph'ale, head).—This is a disease in which the main feature is an accumulation of fluid in the central cavities of the brain. Sometimes the child is born in that condition, and then the dangers of delivery are considerably increased. More generally the symptoms appear after birth, and become more marked in the second and third years of life. At first, and before the child can walk, nothing particular may be noticed, except that it has a large head. But as it grows older, it will be found that the child is not so sharp as others of the same age, that it walks with difficulty, that its teeth are backward in appearing, and that the size of the head is out of all proportion to the rest of the body. The upper part of the skull enlarges so that the face appears much dwarfed; the eyes are apt to roll about, and there is inability to look upward; the skin over the scalp is smooth and tense, and often marked with superficial veins. The rest of the body is generally badly nourished, and the legs are often bowed if the child has walked too early, and the wrists and ankles

are enlarged. Such children are more liable than others to catch infantile disorders, such as whooping-cough, convulsions, measles, scarlet fever, etc. When the mischief is but slight, the child may grow up to adult life; but when far advanced, death generally takes place before the child has reached five years of age.—See also DROPSY.

Hydrocephalus, Treatment of.

—The treatment will consist of giving nourishing food and tonic medicines; bathing with cold water or sea-water may do good. Bandaging the head has been recommended, and various preparations of mercury have been rubbed in, but very little in this way can be done.

Hydrogen, Sulphuretted.—See CESSPOOLS, EFFLUVIA FROM.

Hydromel (*Gr.* *hu'dor*, water; *Lat.* *mel*, honey).—This consists of the same ingredients as mead, but it is not subjected to fermentation; and is more, therefore, a drink resembling table beer than of a vinous nature. From its being a preparation of honey, it possesses, in a certain degree, the same qualities and the same inconveniences as mead.—See also MEAD.

Hydrophobia (*Gr.* *hu'dor*, water; *phobos*, fear).—Hydrophobia is the term applied to the conditions which occur in the human being after the inoculation of the saliva of a rabid animal, most frequently of dogs or cats. The term in its derivative sense is not always applicable, as the "dread of water" is not always present either in the patient or in the animal inflicting the injury. Mr. Youatt, in his treatise on canine madness, thus describes the symptoms of this disease in dogs, from whom the disease is most generally derived:—"The disease manifests itself under two forms: the *furious* form, characterized by augmented activity of the sensorial and locomotive systems, a disposition to bite, and a continued peculiar bark. The animal becomes altered

in habits and disposition, has an inclination to lick or curry inedible substances, is restless, and snaps in the air, but is still obedient and attached. Soon there is loss of appetite and thirst, the mouth and tongue swollen; the eyes red, dull, and half-closed; the skin of the forehead wrinkled; the coat rough and staring; the gait unsteady and staggering; there is a periodic disposition to bite, the animal in approaching is often quiet and friendly, and then snaps; latterly there is paralysis in the extremities; the breathing and deglutition become affected by spasms; the external surface irritable, and the sensorial functions increased in activity, and perverted; convulsions may occur. These symptoms are paroxysmal; they remit and intermit, and are often excited by sight, hearing, or touch. The *sullen* form is characterized by shyness and depression, in which there is no disposition to bite and no fear of fluids. The dog appears to be unusually quiet, is melancholy, and has depression of spirits; although he has no fear of water, he does not drink, he makes no attempt to bite, and seems haggard and suspicious, avoiding society, and refusing food. The breathing is laboured, and the bark is harsh, rough, and altered in tone; the mouth is open from the dropping of the jaw; the tongue protrudes, and the saliva is constantly flowing. The breathing soon becomes more difficult and laborious; there are tremors and vomiting and convulsions."

Hydrophobia, Symptoms of.—

"The symptoms of hydrophobia," says Dr. Thomas Watson, in a valuable article on the subject, contributed to the *Nineteenth Century*, "stated in broad outline, are these: excessive nervous irritability and terror, spasmodic contractions of the muscles of the throat, excited by various external influences, and especially by the sight or sound of liquids, and by attempts to swallow them, and sometimes absolute impossibility of swallowing them, earnest attempts to do so notwithstanding.

"When fluids are offered to and pressed

upon the patient, he will take the vessel containing them into his hand, but draws back his head to a distance from it, with a repelling and apparently involuntary gesture; meanwhile he makes a succession of hurried, gasping sighs and sobs, precisely resembling those which occur when one wades gradually and deeply into cold water. The sound of water poured from one vessel into another, gusts of air passing over his face, the sudden access of light, the waving of a mirror before his eyes, the crawling of an insect over his skin—these are things which in an hydrophobic patient suffice to excite great agitation, and the peculiar strangling sensation about the fauces. He goes on rapidly from bad to worse; in most cases more or less of mania or delirium is mixed up with the irritability. Illusions of the senses of sight and of hearing are not uncommon. The sufferer is very garrulous and excited. In some cases, but not in all, there is incontinence of urine. Foam and sticky mucus gather in his throat and mouth, and he makes great efforts by pulling it with his fingers, and by spitting, blowing, and hawking to get rid of it; and the sounds he thus makes have been exaggerated by ignorance and credulity into the foaming and barking of a dog. In the same spirit, the palsy of his lower limbs, which sometimes takes place, rendering him unable to stand upright, has been misconstrued into a desire on his part to go on all fours like a dog. Vomiting is a frequent symptom. The pulse in a short time becomes frequent and feeble, and the general strength declines with great rapidity. Death occasionally ensues within twenty-four hours after the beginning of the specific symptoms. Most commonly of all, it happens on the second or third day; now and then it is postponed to the fifth day; and, in still rarer instances, it may not occur till the seventh, eighth, or ninth day.

“Usually the paroxysms, becoming more violent and frequent, exhaust the patient; but occasionally the symptoms undergo a marked alteration before death. The paroxysms cease, the nervous irritability

disappears, the patient is able to eat and drink, and converse with ease; those sights and sounds which so annoyed and distressed him before no longer cause him any disquiet. The late Dr. Latham had a hydrophobic patient under his care in the Middlesex Hospital. On going one day to the ward, he fully expected to hear that the patient was dead, but he found him sitting up in his bed quite calm and free from spasm. He had just drunk a large jug of porter. ‘Lawk, sir!’ said a nurse that stood by, ‘what a wonderful cure!’ The man himself seemed surprised at the change; but *he had no pulse*; his skin was as cold as marble. In half an hour he sank back and expired.”

Hydrophobia, Symptoms of, in Dogs.—A knowledge of the periods at which madness attacks dogs is of great importance, and with this object the Council of Hygiene of Bordeaux issued the following instructions:—“1. A short time after the madness has seized the dog, he becomes agitated and restless, and turns himself continually in his kennel. If he be at liberty, he goes and comes, and seems to be sucking something; then he remains motionless, as if waiting; he starts, bites the air, seems as if he would catch a fly, and dashes himself, barking and howling, against the wall. The voice of the master dissipates these hallucinations; the dog obeys, but slowly, with hesitation, as if with regret. 2. He does not try to bite, he is gentle, even affectionate, and he eats and drinks; but he gnaws his litter, the ends of the curtains, the padding of the cushions, the coverlid of the beds, the carpets, etc. 3. By the movement of his paws about the sides of his open mouth, one might think he was wishing to free his throat of a bone. 4. His voice has undergone such a change that it is impossible not to be struck with it. 5. The dog begins to fight with other dogs.”

Hydrophobia, Treatment of.—“What can be said,” remarks Dr. Thomas Watson, in the article already quoted under

"HYDROPHOBIA, SYMPTOMS OF," "of the treatment of hydrophobia or of rabies? There is no authentic case on record, that I am aware of, in which an hydrophobic person has recovered. As it has been, so it is still. The physician that cures is Death. It would be idle to discuss any curative measures after the peculiar symptoms of the disease have once set in.

"Not so, however, with respect to prevention; that is the important object in our practice. The early and complete excision of the bitten part is the only means of prevention in which much confidence can be placed; and even that is open to a source of fallacy. In the majority of cases no hydrophobia would ensue, though nothing at all was done to the wound. No doubt many persons undergo the operation needlessly. But in no given case can we be sure of this. If incision should, for any reason, be impossible, the wound should be cauterized."

Hydrothorax.—See DROPSY.

Hygiene of the Mouth (*Gr. Hügeia*, name of fabled Goddess of Health).

1. *Tartar*.—The accumulation of tartar about the necks of the teeth and the retention of food and other matters in their depressions and between their contiguous surfaces, there to undergo fermentation and decomposition, are the principal existing causes of diseased gums, loosened teeth, and decay. It follows, therefore, that such deposits should be removed before they have had an opportunity to work mischief. There is no question that the one great essential to a healthy mouth is cleanliness. In fact, few, even of those who pride themselves upon the care which they bestow upon their dental organs, give to them the attention which their value would justify. Many otherwise intelligent persons fail to appreciate the importance of taking due care of their teeth until compelled by suffering to do so. Then, when the demand has become imperative, their chief thought seems to be not how best to prevent mischief and to retain what is left of their dental organs

in as perfect a condition as possible, but how immediate relief can be secured, or else how painless extraction can be effected. It must not be forgotten that decay is not the only enemy of the teeth. The absorption of the gums and sockets caused by the presence of tartar is a liability which, though not absolutely confined to teeth which are neglected, is yet a danger specially threatening such. This result might in a majority of instances be prevented by intelligent care—recession of the gums or absorption of the sockets rarely occurring in mouths that are habitually kept pure.

2. *Powders and Washes*.—On the other hand, many scrupulously careful people bring about the evils which they seek to avert, by improper methods and appliances. Much mischief is wrought by the use of unsuitable brushes and injudicious brushing, by the use of tooth powders and mouth washes, made in ignorance of the purposes to be subserved by their employment, and likely to do harm, either because of their chemical action upon tooth-substances, their unfavourable influence upon the health of the gums, or because of their containing ingredients likely to be deposited about the necks of the teeth, and thus cause the absorption of the gums and alveolar processes.

Simple measures regularly employed are sufficient for healthy mouths. In diseased conditions the wash or powder to be employed should be prescribed by an intelligent dentist. Patent nostrums and advertised powders and washes should be avoided. Any wash that is recommended for whitening the teeth is either incapable of accomplishing what is claimed for it, or does so at the expense of the integrity of the enamel. The habitual use of astringent washes or powders, so far from being conducive to the health of the gums, is injurious. For certain purposes such dentrifices are of service: but their use should be discontinued as soon as the object for which they are employed has been accomplished. Strong alkaline washes are also injurious. Washes or powders containing alun, cream of tartar, charcoal, ground barks, or acids of any

description are injurious, either because of a chemical action upon the teeth, or because their insoluble ingredients are apt to insinuate themselves under the margins of the gums. Tooth powders containing excessively gritty or abrasive ingredients, or even those of ordinary abrasive powder not sufficiently fine, do injury by roughening instead of polishing the enamel surfaces of the teeth.

3. *Powdered Charcoal*.—Perhaps there is no agent in common use for cleansing the teeth worthy of such utter condemnation as powdered charcoal. The results of its employment are exceedingly pernicious; the harsh, insoluble particles force themselves between the gums and the teeth, creating irritation, soreness, and inflammation of the tissues, and forming nuclei for the deposit of tartar, resulting in the absorption of the alveolar processes, and in the loosening and loss of the teeth. Its continued use also causes the gums to assume a tattooed appearance, like that which Indian ink produces when pricked into the flesh.

4. *Selection of Tooth Brush*.—It is safe to affirm that a very large majority of persons err in the selection of a tooth-brush. Most of the brushes in the market are too stiff and too large. The habitual use of such brushes is attended with ill results. Again, those who are most solicitous to secure perfect cleanliness of the teeth are apt to err decidedly in a too vigorous use of the brush. Many sets of teeth have been ruined by too much or injudicious brushing. Skill and not force, faithfulness and not muscle, are required to secure the best results. Most persons scrub the outer surfaces of the teeth as if to clean by scouring or friction were the object in using a brush. A *very moderate* application of a proper brush, with a gentle frictional powder, is sufficient for the external surfaces of the teeth, and is desirable in order to prevent the tendency to unsightly discolorations; but, as a prevention of decay, is the least useful mode of brushing. Indeed, if the cleansing process is carried no farther, this style of brushing does, perhaps, more harm

than good, as it rubs particles of food and stringy mucus in between the teeth, and allows them to remain just where they are capable of producing the greatest mischief. The surfaces of the teeth which are exposed to the movements of the tongue, lips, and cheeks, being thereby protected, do not especially need brushing, except to remove stains, while the interstices, interspaces, fissures, depressions, and cavities, are exposed to the deleterious action of the fermenting materials which naturally lodge there; to which are added the reinforcements carried by crosswise brushing.

It should be remembered that the removal of the accumulations of food or mucus from the depressions in the bicuspid and molars and from between the teeth is the essential point. The brush should be moderately soft, the bristles long and elastic, and of unequal lengths, so as to facilitate their introduction between the teeth. The upper teeth should be brushed downwards and the lower teeth upwards, both on the outer and inner surfaces, thus avoiding crowding the gums from off the necks of the teeth while tending to the dislodgment of any deposits between them. The articulating faces of the teeth should be brushed with the same care as the other surfaces—backwards and forwards and from side to side, over the grinding surface of the molars, so as to cleanse all the depressions.

5. *Use of Powders*.—Once daily is quite enough to use a powder, and the best time is just before retiring. During the waking hours the various movements of the tongue and muscles of the mouth in speech and otherwise, the constant salivary secretion and the mastication of food, all tend to prevent the chemical changes which during sleep take place without hindrance. The morning cleansing may be properly performed with the aid of a little pure mild soap, such as old Castile, or a reliable tooth soap made expressly for the purpose; the latter will be all the more efficient if it contain an antiseptic, such as creosote, carbolic acid, or salicylic acid. After meals it will be sufficient to use tepid water, to which has

been added a few drops of spirit of ammonia, or a little bicarbonate of soda, or lime water—simply to neutralize any acidity. These after-meal cleansings should not involve a too vigorous use of the brush—merely a skilful dislodgment of adhering or impaled food is required.

6. *Cleansing during Change of Teeth.*—During the period occupied by the shedding and replacement of the temporary teeth—say from five to fifteen years of age—it is difficult to keep the teeth clean or the mouth sweet and healthy. It is advantageous during this time, indeed at any period of life when an acid condition of life is recognised, to use after the evening brushing a small quantity of precipitated chalk, rubbing it into the interstices of the teeth with the finger and allowing it to remain. The quantity need not be enough to be unpleasant; as much as would adhere to the end of a moistened finger is sufficient to counteract any acidity during the night.

7. *Use of Tooth-pick.*—The use of a quill tooth-pick after meals, to dislodge particles of food from between the teeth, is advisable; as is also the use of a strand of waxed gloss-silk passed between them at least once daily.

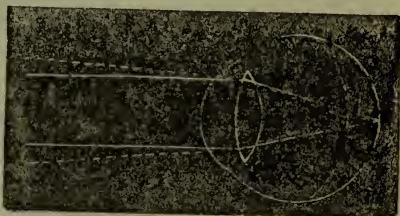
Such is the care suggested by the inestimable value of the teeth, and by their increasing tendency to early decay; but such care can hardly be hoped for until the public realize that to lose a tooth is a real misfortune; to extract one, unnecessarily, a crime.—See also PHERIOL SODIQUE.

Hypermetropia, or Long-Sight

(*Gr. hyper, beyond; metron, measure.*)—This condition of vision should not be confounded with presbyopia, as it very frequently is. This mistake is a natural one, as both conditions require convex glasses, and both are popularly called “far-sight,” though this is not a correct term for either of them. Presbyopia, or “old-sight,” affects merely the near point of distinct vision, which is removed further from the eye; while in hypermetropia both the near and the far point are involved, and there is no dis-

tinged vision at any distance without a strain; this strain exists even for distant vision, but becomes greater the nearer the object looked at. Old-sight is a failure of the power to accommodate the focus of the eye to near objects resulting from a natural change in the density of the lens; while hypermetropia is a defect in the focus, dependent upon the form of the eye, and exists in childhood.

In hypermetropia the axis of the eyeball is too short, and the focus falls beyond the retina, which is too near the cornea. If the shape of an emmetropic eye is compared to that of an orange, a hypermetropic eye will have more the form of a turnip. In the accompanying diagram the continuous outline shows the form of the emmetropic eye,



HYPERMETROPIA.

and the dotted curve indicates the position of the retina in hypermetropia. It will be seen that rays of light which enter the eye parallel are intercepted by the retina, in this false position, before they are brought to a focus, and that only convergent rays can be focussed accurately upon it.

In very young people, in whom the lens is soft and easily acted upon, and who usually occupy themselves less constantly in close work, a very considerable degree of hypermetropia may pass unnoticed; but sooner or later, according to the degree of the defect, the vigour of the individual, and the nature of his occupation, the time must come when the strain will manifest itself by discomfort, distress, or complete disability for anything but manual labour. At first there is merely a sense of fatigue

on prolonged use of the eyes, with, perhaps, a slight pain or "heavy feeling" in the brow. Then, after reading for a time, particularly at night, the print, which at first may have been perfectly sharp and clear, becomes blurred and misty, or even fades away entirely; by closing the eyes for a little while, and, perhaps, rubbing or bathing them, it is possible to resume the strain, but the same experience is repeated. Persons who persist in struggling on in this way have, for some time after the work is laid aside, a feeling of fatigue and discomfort in the eyes, accompanied by headache, and not unfrequently dizziness, irritability, and mental confusion. Finally, in many cases, the tension of the accommodative power required for distant vision is felt, and these symptoms, to a greater or less extent, become continuous, even when no attempt is made to use the eyes for near work.

Hypochondriasis (*Gr.* *hupo*, beyond; *chondros*, cartilage; in allusion to region below short ribs, the supposed seat of the disorder).—Hypochondriasis—also known by the old English equivalent of the Vapours—seems to be the correlative in the male sex of that which, in the female, we call hysteria. The conditions have long been well known, though very various causes have been assigned to it, the favourite being for many years the formation and circulation of "black bile," for melancholia means this exactly. Nowadays we assign to it a nervous origin, and though there may be no actual disease, the condition is one very hard to get rid of. Most frequently there is functional derangement of some part, generally of the stomach, though sometimes there is real alteration in structure.

Hypochondriasis, Symptoms of.—The chief characteristic of hypochondriasis is a morbid self-consciousness similar in some respects to that of hysteria, but generally taking a different direction. The hypochondriac usually fancies himself the

subject of all the ills that flesh is heir to. There is usually a great dread of death, and the patient resents being told there is nothing the matter with him. Withal such a man always has something the matter with him—generally a most obstinate indigestion. And if that be cured, the patient is frequently in a fair way to be relieved of his mental symptoms. Frequently this malady assumes the character of insanity, some member of the body being supposed to be lost, or so altered as to be useless, or worse than useless. Hypochondriasis seldom occurs in those who lead an active, healthy life in the open air. It is most frequent among those who, living well, take little exercise, and whose lives are what is termed sluggish. Such individuals will often be subject to short attacks of a malady of this kind, which a little laxative medicine and exercise in the open air will soon carry off. It is very frequent, too, among those who, having led an active life, retire to comparative early rest and quiet, as they think. Such, having seldom any internal resources in the way of education and cultivation, have recourse to morbid retrospection. Their own feelings, desires, and aims become their only company, and so each uncomfortable sensation is pondered over until some comparatively slight ailment becomes a thing of the first magnitude. Those who have long had their minds strained by overwork are liable to a somewhat similar form of disturbance. In them, however, the bodily subject is less the object of notice—it is the mental; it is those which suffer most. They become miserable objects for the time being; they lose their nervous energy, become weak and wretched; they fear to cross the streets; they live in constant dread of having done something wrong, or of having wrong attributed to them; they are the shadows of their former selves. Hard students are frequently so troubled.

We have already hinted at the causes of this malady. These are essentially the continued use of one part of the system, the other being left without due exercise.

Hypochondriasis, Treatment of.

—In one set of cases mentioned above, exercise for the head is wanted; in another, exercise for the body. For the retired man of business something is wanted to keep his mind engaged, and such may often be found in the affairs of the parish or township in which he may be placed. To the other set of patients mental work is already too severe a burden. They ought to have more relaxation, and this relaxation ought to be devolved to bodily exercise. The selection of a kind of exercise may in great measure be left to each individual. But this is to be borne in mind: that extremely violent exercise for a few moments will not answer the same purpose that moderate exercise for a longer period will; so, too, violent exercise one day and quiet the next will not answer. The great thing is to keep the system equable. Such men as desire to excel in mental work should not attempt to vie with the athlete. The two things are very seldom compatible.

These things are, however, rather to be looked upon as means of maintaining health in all these circumstances, or in getting rid of slight attacks of the malady. They will not suffice for more serious ones. When a man is fairly "hipped," as it is called, there is only one satisfactory remedy—total change of scene and pursuits. Often we have seen a new lease of life gained by a short rest and change of scene. After these, the general rules above laid down are to be duly observed; especially is indigestion to be looked after, but only by proper food and appropriate exercise—not by medicines, if they can be avoided.

There is one final caution we desire to enforce, and we do this very earnestly. As a rule, hypochondriacs sleep badly—often those especially who have too much mental and too little bodily work are troubled with frightful dreams and restless nights. To these we say, avoid opium or other sedatives; if the bowels are not open, try a blue pill and a black draught.

Hysteric Contractions (Gr. hys-

terikos, caused by womb; from hystera, the womb).—It is remarkable that hysteria is sometimes accompanied by a distortion produced by a spasmodic contraction of the flexor muscles of one of the joints, commonly the knee or hip. For months or years this painful condition may last without mitigation; yet it may vanish all at once under the influence of some powerful impression of the body or mind. The entire loss of the voice, which sometimes comes on suddenly in similar constitutions, and, after long resisting every remedy, as suddenly departs, is probably an analogous affection of the muscles of the larynx.

Hysteric Toothache.—See **TEETH, NERVOUS RELATIONS OF THE.**

Hysterics.—Hysterics consist in a convulsive struggling, alternately remitting and increasing, with a sense of the suffocating ball in the throat, drowsiness, copious discharge of pale urine, rumbling in the bowels, and fickleness of temper.

Hysterics, Causes of.—Hysteric affections occur much more frequently in the unmarried than in the married, and most commonly between the age of puberty and that of thirty-five years; and they make their attack oftener about the period of menstruation than at any other time. Women of a delicate habit, and whose nervous system is extremely sensible, are those most subject to hysterics; and the habit which predisposes to their attack is caused by inactivity and a sedentary life, grief, anxiety of mind, late hours, dissipation, a suppression or obstruction of the menstrual flux, excessive evacuations, and the constant use of an innutritious diet. They are readily excited in those who are subject to them by passions of the mind, and by every considerable emotion; and are especially the effect of surprise: hence sudden joy, grief, or fear are very apt to occasion them. They have also been known to arise from irritation and sympathy. Constipation and severe disorder of the bowels will

sometimes give rise to very painful hysteric fits.

The exciting causes of hysteric fits are chiefly the various affections of the mind, as fear, terror, pleasing excitements, sudden joy, anxiety, or distress of mind. And the proper preventive treatment, consequently, is the regulation of the mind, and avoidance of the above mental affections in their excess.

Hysterics, Symptoms of.—The hysteric fit often takes place without any previous warning, though generally there are some precursive signs, as yawning, stretching, dejection of spirits, anxiety of mind, sickness at the stomach, palpitation of the heart, and sudden bursts of tears, without any assignable cause. The paroxysm soon succeeds, with a coldness and shivering over the whole body, and frequently with an acute pain on the left side, and a sense of distension, giving the idea of a ball or globe rolling about in the abdomen, and gradually advancing upwards till it gets into the stomach; thence removing to the throat, it occasions the sensation of an extraneous body lodged there, which is called *globus hystericus*. The disease having arrived at its height, the patient appears threatened with suffocation, she becomes faint, and is affected with stupor and insensibility; whilst, at the same time, the trunk of the body is twisted backwards and forwards, the limbs are variously agitated, and the fists are closed so firmly that it is difficult, if not impossible, to open the fingers: wild and irregular actions follow, in alternate fits of laughing, crying, and screaming, incoherent expressions are uttered, and sometimes a most obstinate and distressing fit of hiccough takes place. The spasms at length abating, a quantity of wind is evacuated upwards, with frequent sighing and sobbing; and the patient, after appearing for some time quite spent, recovers the exercise of sense and motion, without any other feeling than a general soreness, and a pain in the head. It is rarely that an hysteric fit has become

dangerous; though it has, in a few instances, terminated in epilepsy or insanity.

Hysterics, Treatment of.—Put the hysterical person on the bed, and loosen all the clothing; slap the chest and face smartly with the end of a towel dipped in cold water. Be decided but not hard in your manner. The hysterical fit will pass off without injury to the patient.

A sensible writer recommends cold bathing, open-air exercise, strengthening diet, cheerful surroundings, with the removal of all care and perplexities. Attention to a proper regularity of the bowels, and frequent change of air and scene are positively required. *All irksome family requirements should be suspended.* Iron pills may be taken, two at a dose, night and morning; and a bitter tonic (quassia, gentian, etc.), in half-wineglass doses, two hours before dinner and supper. At the proper season, sea-bathing will prove beneficial. Kindness from family and friends is imperatively required. Hysterical women should not nurse infants. Snuff, opium, and camphor are not recommended. Strong tansy tea, taken cold and in small quantities, will be found serviceable. A long, narrow strip of strengthening-plaster, worn the entire length of the spine during cold weather, will do good. This may be made by mixing with heat, dark resin with half its proportion of beeswax, adding a few drops of olive oil.

Ice.—When ice is required either in sickness or for table purposes, care should be taken that it is obtained from proper sources. A large quantity of ice, apparently clear and transparent, is sold, which, comes from objectionable sources, and, when melted, fairly merits the designation of dirty water. Some of this melted ice has been found to contain a considerable amount of sediment, apparently of vegetable matter. Those who use ice should test its purity by dissolving a small portion in a wineglass, and if the water is clear and bright, in all probability it will be fit for use; but if otherwise, it should be rejected.

Some people suppose that ice purifies itself by the process of freezing, but this notion is not based upon trustworthy observation.

Ice.—See APPLICATIONS, COLD.

Ice-Bags.—See APPLICATIONS, COLD.

Ice-Cream.—Ice-cream, when made of pure milk or cream, and flavoured without the aid of injurious ingredients, is not only harmless, but positively beneficial. It is very properly eaten in the evening or between meals, or, at least, as an accompaniment of hot food. An objection to eating it largely at meals is, that it cools the stomach, especially if it be delicate, to such a degree that digestion is hindered. The custom of combining ice-cream with acid fruits is as wise as it is agreeable.

Ice-Cream, Effects of too much.—A little miss in Western Pennsylvania, just entering her “teens,” ate twelve saucerfuls of ice-cream and died in two hours; this shows that a person may have too much of a good thing, and that it would be rather better not to eat twelve saucerfuls of ice cream at a single sitting.

Ice, Melted.—See PURE WATER.

Ice-Water.—Ice-water is a comfortable, but an unhealthy and even dangerous, drink for summer, for the more you drink the more you have to drink, until an uncomfortable oppression is observed. One-fifth the quantity swallowed, in the shape of small lumps of ice, satisfies the thirst.

Iceland Moss.—Iceland moss is mainly composed of a substance called *lichenin*, which bears a close resemblance to starch. One part of lichenin gives a jelly with twenty parts of boiling water. The bitter taste of Iceland moss is due to the presence of an acid; this may be removed by letting the moss stand in a weak solution of carbonate of soda. Iceland moss on analysis gives;—

	In 100 parts.	In 1 lb. oz. gr.
Water	10.2	1 262
Albuminoids	8.5	1 170
Lichen-starch	70.0	11 90
Lichen-acids, etc.	6.3	1 3
Cellulose	3.6	0 240
Mineral matter	1.4	0 110

The moss sold by the chemists as Carrageen moss or Irish moss is similar in character to Iceland moss, and is used for the same purposes.



ICELAND MOSS.

Iceland Moss Jelly.—Iceland moss contains a bitter principle, from which it should be freed before being used as an article of diet. For this purpose pound it in a dry state, and soak in tepid water along with a little bicarbonate of soda for twenty-four hours, after which press in a coarse cloth. Add an ounce of the moss so prepared to a quart of water, and let the mixture boil to one-half. Strain through a sieve, and sweeten and acidulate, or mix with milk according to taste.

Idiosyncrasies (*Gr. id'ios*, peculiar; *sung'krasis*, a mixing together).—Idiosyncrasies, or personal peculiarities in regard, for example, to some article of food or drink, are very common, and deserve careful attention from every one who desires to attain long life and retain good health.

Some of them are very curious, as, for instance, the inability to eat shell-fish without suffering from nettlerash, or the production of vomiting and diarrhoea by small quantities of egg in any form. As, however, every one must learn by experience what his own personal idiosyncrasies are, and will soon be taught how severe is the punishment for violating the laws of his existence in trying to do as others do in these particulars, we need not enter further into their consideration.

Idiosyncrasies in Regard to

Food.—The subject of fats reminds us that we ought to devote a few lines to the aversion which some people entertain to some particular kinds of food. Children are apt to express likes and dislikes for certain kinds of food which have no other basis than their own fancy. There are, no doubt, however, peculiarities of constitution—idiosyncrasies as the doctors call them—which not only give an aversion to the flavour of some particular food, but prevent it from being digested. We know a gentleman who always turns away in disgust from a strawberry, and who, if he swallows one unawares, suffers a severe attack of nausea and vomiting. There was also a lady of our acquaintance to whom the smallest portion of any sort of fish would, if swallowed, act with the promptitude and certainty of the most powerful emetic. In the latter case there was the *strange* peculiarity that fish was exceedingly agreeable to the taste, and was with difficulty abstained from, and only on account of the sickening effects resulting from eating it.

Such peculiarities are rare, but it is well to be conscious of their existence, and especially should they be taken note of by parents, for although caprice is generally the cause of a child's seeming dislike to particular articles of food, there may be occasionally a constitutional reason for it. "Parents certainly," says a sensible writer, "are often wrong in urging upon a child, in spite of his strongly expressed aversion, certain kinds of diet, in excessive quantities,

merely because they believe them particularly healthy. They have thus been known to empty the salt-cellar into the unwilling mouths of their little ones, as if they were herrings, and only to be preserved from decay by that process. But living human creatures, it is hardly necessary to say, are not dead fish; and though the former are undoubtedly the better for a flavour of this useful substance, they do not require, like the latter, to be pickled with it.

"Again, it having been stated that fatty substances are useful remedies in certain diseases, many parents, with the hasty inference of thoughtless folks generally, concluded that they were sure remedies for the cure of all the ills that flesh is heir to. Accordingly, they at once began an oleaginous course of treatment in their families, doubly buttering the daily bread, skimming the scant cream from the breakfast milk, picking out the bits of yellow fat from the dinner joint, and thrusting them down the throat of each youngster, as if he were a *blubberorous* Esquimaux. Fat, like salt, may be conceded to be not only a useful but an essential part of human diet; but it is not necessary—in fact, it is unwholesome—to gorge people with it in a temperate climate, and cause it to be swallowed in such wholesale quantities. Children naturally resist such treatment with an instinct of aversion, which is a far better guide to health than the ready acceptance by parents of any cure-all in vogue."

Ileum (*Lat. Illa*, entrails), supposed to be so called from its numerous coils, includes the remaining ten or twelve feet of the small intestine.

Ill-Ventilated Places, Air in.
—See AIR IN ILL-VENTILATED PLACES.

Importance of Water.—See WATER, IMPORTANCE OF.

Impressions of Light on Retina.—See LIGHT ON RETINA, IMPRESSIONS OF.

Impressions of Sight.—The correct interpretation of the impressions received by sight is after all, to a great extent, a matter of practice and education, with the assistance of the sense of touch. This is proved by numerous observations made upon persons who have been born blind, and whose sight has been restored, or rather acquired, by surgical operation. None of these persons have shown any indication of an instinctive use of their new-found sense; all have had to learn to see. None could distinguish form or distance, or could recognise at first, by sight alone, even objects that had been familiar to touch for years. Some seemed to find their first experiences painful rather than pleasant; and it is related of one, who had earned his living as a street musician and had gone about the town alone for years, that he became confused and lost himself when his eyes were opened, and had to beg some one to lead him home. All this is well illustrated in the interesting and instructive, even if somewhat apocryphal, story of Kaspar Hauser, who was imprisoned in a dark cell for the first sixteen years of his life.—*See* KASPAR HAUSER.

Impressions, Velocity of Transmission of, by Nerves.—*See* VELOCITY OF TRANSMISSION OF IMPRESSION BY NERVES.

Incautious Use of Medicines.—*See* MEDICINES, INCAUTIOUS USE OF.

Incisors.—*See* PERMANENT TEETH.

Incontinence of Urine (*Lat. in*, not; *continsens*, holding; from *contineo*, I hold; *urina*, water).—Incontinence of urine is a frequent or a perpetual discharge of that fluid, with difficulty of retaining it.

This disease usually proceeds from relaxation or palsy of the sphincter muscle of the bladder, induced by debility, the abuse of spirituous liquors, etc.; or it arises from a peculiar acrimony in the fluid itself; from a diseased state of the organ; injury done

to the parts, either by accident, by the process of ulceration, or by the performance of the operation of lithotomy; irritation produced by stones in the bladder; or the pressure of the womb in the state of pregnancy.

Incontinence of Urine, Treatment of.—As the complaint commonly proceeds from debility, tonics are generally found to be the most efficacious remedies, such as bark and steel. At the same time that one of these remedies is taken internally, cold water should be freely applied locally, and a belladonna plaster to the *sacrum*, or broad bone at the bottom of the spine, is frequently of material service. Blisters applied to the sacrum of boys who are apt to wet their beds have often completely cured them of this incontinence, but they should not be employed unless ordered by the medical attendant. The abstaining from fluids for some hours before retiring to rest is beneficial.

Indian Clubs.—It would be useless to enumerate all the various kinds of apparatus used for training. In point of fact, with a pair of light wooden clubs you can do all you want. It is desirable to enforce the point that what is required is motion, and motion, if possible, of every joint and muscle. There is one caution which should not be overlooked, that is, do things by degrees; never attempt violent exercises all at once. The reason is obvious: your muscles may be strong and require little training, but a town life almost inevitably throws out of good training the heart and lungs, though we do not seem to perceive it until we attempt some unusual exertion.

Indications of Health and Disease.—*See* HEALTH AND DISEASE, INDICATIONS OF.

Indigestion (*Lat. indiges'tio*; from *indiges'tus*, not set in order; from *in*, not; *diges'tus*, set in order; from *dis*, apart;

ges'tus, carried; from *gero*, I carry).—Indigestion, or dyspepsia, as it is also commonly called, is in one group mainly due to simple derangement of the powers of digestion without any eventual change in its organs. This derangement is dependent on weakness; but the source of the weakness may be local, that is, confined to the stomach; or general, that is, due to something which affects the whole system. To this group, too, belong the changes which take place in the digestive organs in old age. Another large group of indigestions are connected with inflammatory changes in the stomach. These changes may depend on various causes; very frequently improper food—improper, that is, in quantity or quality—is at the root of the mischief. Yet another form of indigestion is due to nervous influences; witness the effects of anxiety, fear, and the like emotions in completely averting not only appetite but digestion.

Irregularity in taking food is a great drawback to perfect digestion. And this must be remembered, that if a man is working hard in the open air he can digest twice as much food, and many times more of some kinds of food, as one who lives a habitually sedentary life. Deficiency of food, accompanied as this almost invariably is by unsuitable food, is a serious cause of dyspepsia among the poorer classes.

In health, all we ought to know of our digestion through sensation is, that satiety has succeeded hunger, and that, for a shorter or longer period, we are indisposed to exertion. When digestion is imperfect, many sensations, local and general, occur to distress and disturb us. The stomach may be the seat of pain, and of feelings of weight and distension; nausea and loathing of food may take the place of appetite, and retching and vomiting may be continually present; the brain and nerves may be disordered, depression of spirits, headache, confusion of thought, disturbed vision, vertigo, fits of insensibility may follow, the action of the heart may be irregular, the breathing oppressed and embarrassed with constant troublesome cough.

Indigestion.—See also **DYSPEPSIA**.

Indigestion, Symptoms of.—In dyspepsia the whole character of the individual gradually changes for the worse; the most placid man becomes petulant and irritable; the loving heart becomes estranged by groundless suspicions; the cheery face wears an oppressive sadness, while all that was once joyous and hopeful and glad goes out at length into the night of settled melancholy, confirmed madness, or terrible suicide.

Although Galen, perhaps, rather unduly estimated the benefits of regimen, when he desired the philosophers to send all bad characters to him, yet no fact is better established than that diet greatly modifies the temper. Those who, conjoining gastronomic industry with general idleness, acquire dyspeptic acidity of stomach commonly know, also, from experience, the meaning of a sour disposition; and those in whom good humour still so far prevails over bad blood as that they carry a pleasant countenance, yet feel, when gout is brewing in their veins, as if some evil spirit had possession of them, since the slightest circumstance that interferes with their pleasure throws them into a sudden rage. The condition of blood which precedes gout is so constantly associated with irascibility that John Hunter says gout and anger are almost synonymous with some persons. Indeed, it seems that what generally goes under the name of irritability is essentially a disorder of the blood, which operates as a felt inconvenience, an unnatural stimulus, disturbing the proper action of the brain, and rendering it unfit to be employed for the ordinary purposes of the mind. Unless bodily activity accompany free-living, this state is sure to be induced, as students are generally aware, for beef and stimulants, freely enjoyed, very shortly reduce the faculties to confusion, unless, by violent exercise, the waste of the body is, in some measure, proportionate to the supply.

Flatulence is a very important symptom of indigestion. It is due either to accumu-

lation of gas in the stomach and bowels, or it may be formed there. The gas which gives rise to flatulent distension is commonly derived from fermentative changes in the food swallowed. Acidity is another important symptom of indigestion.—*See ACIDITY OF THE STOMACH.*

Indigestion, Treatment of.—

In attempting the cure of dyspepsia, it is necessary to find out the least quantity of nutriment which is required by the system, and the greatest which can be digested by the stomach with comfort. Here the conditions of the patient's life must be borne in mind, for there is a mighty difference in the amount of food which will suffice for a listless invalid and one habitually undergoing powerful bodily exertion.

Moreover, it is of the first importance to present this food to the stomach in an easily digested form. Soups and broths are rarely tolerated in such conditions, mainly because they dilute the gastric fluids too much. Nevertheless, there is one fluid form of food which can usually be taken, that is, milk; and if it cannot be taken fluid, it may be coagulated by rennet. When arising from exhaustion, this form of dyspepsia necessitates small meals; but these may be frequently repeated, and stimulants may be combined with them. No salt or preserved meat should be used, and it should be fairly well but not over-cooked. Hence re-cooked meat is forbidden. Mutton and beef must form the staple diet; game and fowls may be allowed as a change. Pork and veal are entirely excluded, as are ducks and geese. Fish is also permitted within certain limits; herrings and salmon are beyond these, and are not allowed; eels and trout are on the border-land. The best for ordinary use are plain boiled turbot, sole, whiting, or had-dock. Shell-fish, except oysters, are entirely forbidden. Still more care is necessary with regard to starchy food. All vegetable food should be cooked, ~~non~~ ^{not} raw, and it should be young, tender, quite fresh, and well boiled. It is better, on the whole, to try stale bread, macaroni, and rice, with some green veget-

ables, than to use potatoes. Such, at least is our experience. Light puddings are permissible, not heavy, doughy preparations, and all pastry is to be forbidden. Butter may be used with bread, but in no other way, and it should be quite fresh. Fat, or oil in any other shape, is inadmissible. Fruits must be carefully selected; but most may be eaten, or rather sucked, provided everything solid—husks, seeds, and woody matter—be spat out again. Nuts of all kinds must be rejected.

Let us bear in mind the well-founded opinion entertained by Franklin, who said that nine-tenths of the diseases of men were caused by over-feeding. Abernethy, the learned surgeon, in one of his lectures, thus addressed his hearers: "I tell you honestly what I think is the cause of the complicated maladies of the human race: it is their gormandizing and stuffing, and stimulating their digestive organs to an excess, thereby producing nervous disorders and irritation."

Wisdom and temperance have always been companions, and men most famous for the extent and continued energy of their faculties have been convinced that habitual moderation in eating and drinking was essential to the full and healthy employment of their intellect; that those best known for clearness and elevation of mind have also been most remarkable for their control over their appetites. Sir Isaac Newton is a good example. Dr. Cheyne states of him that when he applied himself to the investigation of light and colour, to quicken his faculties and enable him to fix his attention, he confined himself all the time to a small quantity of bread, with a little sack-and-water, without any regulation, except that he took a little whenever he felt his animal spirits flag.

Dyspeptics, with morbid appetite, if intelligent, conscientious, and determined not to abuse themselves, are constantly engaged in a hard struggle, in a hand-to-hand fight. The dyspeptic sits at the table at each meal with a determined will, and gives his whole mind to it.

He says, "Now I will eat one dish of

soup, a small piece of beef, one spoonful of the potatoes, one of cauliflower, a small piece of pie, and just a spoonful of ice-cream." But his appetite is ravenous, the conversation pleasant, he forgets a little, his good resolution fails; he takes just one more mouthful of pie, which turns out, of course, to be another piece, just the least bit of the pudding, which they all declare to be delicious, then another spoonful of ice-cream; well, in short, he repeats for the thousandth time an excess, suffers, and so goes on for months and years.

If there is one rule about eating in which all persons are agreed, it is, that our meals should be taken at stated and regular periods. People may differ about vegetarianism, about sweets, about pies and cakes, about tea and coffee; but we have never met a person who would insist that regularity was of no consequence, that it was just as well to take two meals to-day and five to-morrow; to take dinner at one o'clock to-day, three to-morrow, and five next day. Without understanding the physiological law, all are satisfied that regularity is important.

Dyspeptics should with all their might avoid the following errors:

1. They should not weaken the organs of digestion by giving them too little to do.

2. Their use has been greatly extended and multiplied with the progress of civilization, and especially in modern times.

3. They should not confine themselves to exclusively coarse and loosening food.

Three meals a day is, perhaps, the best rule: breakfast, say, at nine, something about one, and dinner at six. Too long intervals are almost as bad as too short, especially should the sufferer aim at cheerfulness during digestion and absorption. Tea after dinner almost invariably does harm; not so black coffee, moderately strong. As a rule it suits, but it must not be swallowed hotter than the temperature of the body, or a little over, so as to feel pleasantly warm.

All the other matters tending to a restoration to health must be observed. Change

of air and change of scene, a sea voyage, etc., will often do great good; but as the invalid is greatly dependent on food for his cure, he should seek to recruit himself where good plain cooking and sound food are to be had. A good steady walk of twenty miles a day through fine English scenery, with an old-fashioned inn to rest at in the evening, will often do marvels in the way of cure. A cold bath in the morning should be the rule to all who can stand it; if not, one as cold as possible, but not warmer than tepid, should be used.

As regards medicine, it should be laid down as a rule that no medicine is to be taken without a doctor's advice.

We doubt whether there is any remedy in medicine for confirmed dyspepsia. "Medicine," says Dr. Hill, "cannot make gastric juice, which is one of the essential requisites for healthy digestion." It is a liquid prepared as a consequence of the need of repair; this need of replenishment and repair is occasioned by a previous waste or wear; that waste or wear cannot be brought about without motion of the muscles, which is expressed by the word exercise: it is muscular exercise which creates gastric juice. Hence the first essential in the cure of dyspepsia is exercise, more particularly out-of-door exercise.

Indigestion, Hard Bread for.—

An American lady, Mrs. Swisshelm, is reputed to have been cured of a very bad case of dyspepsia by the *hard bread and beer* prescribed by a German physician. She says: "Some years ago, when Pennsylvania doctors sent me back to Minnesota, to die among my kindred, a German physician was called in; but heart and stomach were on a strike, and refused to assimilate food. In great perplexity he said: 'Can you take beer?' I could try, and he went on to prescribe: 'You get the Gheneral to get you some coot peer, fresh from the prewery. Dake von leetle half a glass, mit a pit of hart pread and leetle pit uv cheese. Chew de pread slow, and sip de peer. Do not culp it like some beebles do; schust sip

schlow, and eat the pread and cheese mit it. I dinks maype dat set de stoomach do vork vonce more!’

“His prescription worked like a charm, and in any fit of dyspepsia now, I go back to the hard bread and beer.”

Indigestion, Homœopathic Treatment of.—For this complaint in nervous and hypochondriacal patients, *Arnica montana* is usually prescribed; in bilious and rheumatic patients, *Bryonia*, for chronic dyspepsia, *Hepar sulphuris*; and for indigestion produced by over-eating or sedentary occupation, *Nux vomica*. *Dose*.—One drop of the tincture in one tablespoonful of water administered every two, three or four hours, according to circumstances.

Indigestion, Milk in.—A correspondent of the *Medical Circular* recently communicated a case of obstinate dyspepsia in which the efficacy of milk was most remarkable. He says, “The persevering use of medicine for nearly three weeks appearing to be of no avail, it was determined to abandon the use of drugs altogether, and the patient was directed to take a teaspoonful of milk every hour, and nothing else. The first day’s trial of this remedy was so gratifying that the patient exclaimed, ‘I know it will cure me, as I feel so comfortable after each dose!’ And so it did; the vomiting immediately ceased, and did not return. He continued the milk in gradually increased doses for more than a week; then carefully resumed his usual diet. His recovery was rapid. So much for milk.”

Indigestion, Potato Cure for.—Voltaire asserts that he cured himself of dyspepsia by living for nearly a whole year on the yolk of eggs beaten up with potatoes and water. The mode of preparation, as recommended by Sir John Sinclair, is the following: Beat up an egg in a bowl; then add six tablespoonfuls of cold water; mix the whole together; then add two tablespoonfuls of the farina of potatoes, to be mixed thoroughly with the liquor in the

bowl. Then pour in as much boiling water as will convert the whole into a jelly, and mix it well. It may be taken either alone or with a little milk and sugar, not only for breakfast, but in cases of great stomach debility, or in consumptive disorders, at other meals. The dish is light, easily digested, extremely wholesome and nourishing. Bread or biscuit may be taken with it as the stomach gets stronger.

Indigestion, Slapping Stomach in.—Several years ago, a medical man in New York attained so high a reputation for the cure of dyspepsia that he had no difficulty in obtaining a fee of five hundred dollars for each case he undertook, payable in advance. His patients were bound by solemn oath not to reveal his mode of treatment; but after his death scores of them considered themselves freed from their obligation, and published the secret, which mainly consisted in slapping the stomach or bowels with the palms of the hand for five or ten minutes on rising in the morning; for a quarter of an hour, or more, about eleven o’clock; in the forenoon, and in the evening before going to bed. This is excellent treatment; and we cannot conceive of a class of chronic indigestion which such manipulation would not relieve. Rubbing and kneading for chronic maladies is, however, no new thing. In addition to slapping and kneading the stomach, and exercising freely out of doors, a dyspeptic should eat only when he is hungry, select digestible food and chew it well.

Indigestion, Tonic Mixture for.—See MIXTURES.

Individual, Requirement of Water per.—See WATER, REQUIREMENT OF, PER INDIVIDUAL.

Individuals, Quantity of Food Needed by.—See QUANTITY OF FOOD NEEDED BY INDIVIDUALS.

Indolence, A Cure for.—“Ogal,” says Voltaire, “a voluptuary who could be

managed with difficulty by his physician, on finding himself extremely ill from indolence and intemperance, requested advice: 'Eat a basilisk stewed in rose-water,' replied the physician. In vain did the slaves search for a basilisk, until they met with Zadig, who, approaching Ogal, exclaimed, 'Behold that which thou desirest, but, my lord,' exclaimed he, 'it is not to be eaten: all its virtues must enter through thy pores. I have therefore enclosed it in a little ball blown up and covered with a fine skin; thou must strike this ball with all thy might, and I must strike it back again for a considerable time, and by observing this regimen and taking no other drink than rose-water for a few days, thou wilt see and acknowledge the effect of my art.' The first day Ogal was out of breath and thought he should have died from fatigue; the second he was less fatigued and slept better; in eight days he recovered all his strength. Zadig then said to him, 'There is no such thing in nature as a basilisk! but thou hast taken exercise and been temperate, and hast, therefore, recovered thy health.'"

Infants, Management of, General Rules for.—*See* MANAGEMENT OF INFANTS, GENERAL RULES FOR.

Infectious Disorders, Precautions in.—In his "Autobiography" the Rev. Dr. Guthrie describes the precautions taken by him to avoid infection when visiting the sick and dying during an outbreak of typhus—precautions which may well be adopted by those who may be placed in similar circumstances.

"Typhus fever," he says, "was raging like a plague; and as, taking due precaution against infection, I visited every case I was called to, nor fled from any I happened to meet, I had often to face that terrible disease, and, with one, two, or three lying ill of it all in one room, to breathe a pestilential atmosphere. The precautions I took were very simple, and, with God's blessing, they perhaps contributed materially to my protection. I insisted on the door being

left open while I was in the room, and always took up a position between the open door and the patient, and not between the patient and the fireplace; thus the germs of the disease thrown off in the breath and from the skin of the patient never came in contact with me, but were borne away to the fireplace, and in the very opposite direction, by the current of air which passed me before becoming charged with the noxious matter."

Inferences Drawn from Teeth.

—"The great variety," says Dr. Thomas Andrew, "in the structure of the human teeth fits us for a variety of food, and, when compared with the teeth given to other animals, may, in some measure, enable us to explain the nature of the aliment for which man is intended by nature. Thus, in ruminating animals we find incisors only in the lower jaw, for cutting the grass, and molars for grinding it; in graminivorous animals we see molars alone; and in carnivorous animals canine teeth for catching at their prey, and incisors and molars for cutting and dividing it.

"But as man is not designed to catch and kill his prey with his teeth, we observe that our canine are shaped differently from the fangs of beasts of prey, in whom we find them either longer than the rest of the teeth, or curved. The incisors, likewise, are sharper in those animals than in man. Nor are the molars in the human subject similar to the molars of the carnivorous animals; they are flatter in man than in those animals; and in the latter we likewise find them sharper at the edges, more calculated to cut and tear their food, and, by their greater strength, capable of breaking the bones of animals.

"From these circumstances, therefore, we may consider man as partaking of the nature of these different classes; as approaching more to the carnivorous than to the herbivorous tribe of animals; but, upon the whole, formed for a mixed aliment, and fitted equally to live upon flesh and upon vegetables. Those philosophers, therefore,

who would confine a man wholly to vegetable food do not seem to have studied nature. As the molars are the last teeth that are formed, so they are usually the first that fall out. This would seem to prove that we require the same kind of aliment in old age as in infancy.

Inferior Extremities.—This term in medical parlance is sometimes applied to the legs, in reference to their position, the arms, in contradistinction, being the superior

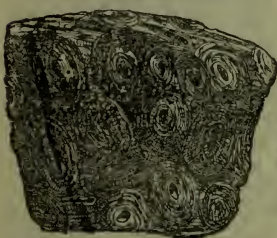


FIG. 2.—SECTION OF BONE, Magnified.

or higher extremities. In fig. 1, which exhibits the bones of the inferior extremity from the hip-joint to the ankle, *a* is the shaft of the femur or thigh-bone; *b*, the articular head; *c*, the neck; *d*, the great trochanter; *e*, the inferior articular surface; *f*, the patella or knee-pan; *g*, the tibia or shin-bone, the inner of the two bones forming the leg; *h*, the fibula or outer bone of the leg; *k*, the internal malleolus; *v*, the external malleolus. Fig. 2 repre-

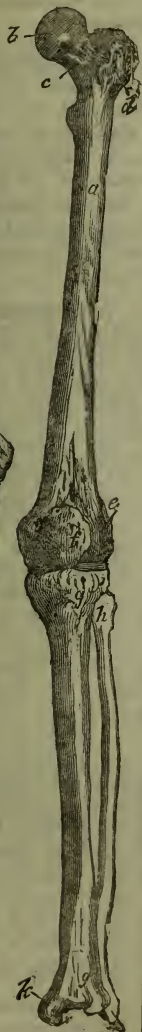


FIG. 1.—THE BONES OF THE INFERIOR EXTREMITY.

sents a section of bone magnified, and is inserted here to show the character and peculiarities of the osseous or bony structure.

Inferior Maxilla.—See JAWS.

Inflammation of Bladder, Symptoms of (*Lat. inflammo*, I set on fire; from *in*, on; *flamma*, flame).—The symptoms of inflammation of the bladder are great pain in the region behind the scrotum or purse, in the groins, and lower part of the back, and tenderness over the bladder. Very frequent desire to pass water, attended with great efforts to do so, and a whitish ropy mucus deposited in the urine, accompanied with feverish symptoms.

Inflammation of Bladder, Treatment of.—Hot baths and hot fomentations, the administration of calomel and castor oil to relieve the abdominal circulation, the pain to be allayed by opium or morphia, either internally, or as a suppository, and copious draughts of bicarbonate of potassa and lemon juice.

Inflammation of Intestines.—This disease is denoted by acute pain in the abdomen, increased upon pressure, and shooting in a twisting manner around the navel; by obstinate constipation, tension of the abdomen, vomiting, etc., as the inflammation happens to be in the superior or inferior part of the intestines; the vomiting being generally bilious, dark coloured, or foetid. Fever likewise attends, with a quick, hard, contracted pulse, great prostration of strength, and high-coloured urine.

The disease either gradually abates and goes off, or terminates in ulceration or gangrene. It is often attended with considerable danger, and may terminate in gangrene in the space of a few days, and sometimes of a few hours, from its commencement. This event is marked by a sudden remission of the pain, sinking of the pulse, shrinking of the features, suppression of urine, hiccough,

and distention of the belly. If the symptoms appear to yield to the means employed, the pain abating gradually, natural stools being passed, and the pulse becoming firm and equal, a favourable termination may be expected. A copious discharge of loaded urine, and a universal perspiration, are favourable symptoms.

Inflammation of Intestines, Causes of.—The suppression of perspiration, by the application of cold to the feet, or exposing the body to cold when over-heated, etc.; acrid or irritating substances introduced by the mouth; obstinate costiveness; violent passions of the mind, are the most frequent causes. It is most apt to occur at an advanced period of life, and is very liable to a relapse.

Inflammation of Intestines, Distinction of.—It is distinguished from colic by its being accompanied with fever and a quick, hard, small pulse, and by the pain being increased on pressure—symptoms which do not occur in colic. In inflammation of the stomach, the pain is seated higher in the region of the abdomen, and is of a peculiar burning kind; the vomiting and hiccough are more severe; and the dejection of mind and prostration of strength much greater.

Inflammation of Intestines, Treatment of.—The treatment of inflammation of the intestines should be at once entrusted to the physician. It is of far too serious a nature to admit of any delay in affording relief, and steps to secure this should be taken under the direction of a duly qualified medical man.

Inflammation of Iris of Eye.
—See IRITIS.

Inflammation of Liver.—An inflammation of the liver is denoted by tension, soreness and pain in the region of that organ, with pain about the right shoulder, difficulty of lying on the left side, and a short, dry cough. This disease is usually

divided into the *acute* and *chronic* inflammation of the liver; the second variety being what is popularly called a *liver complaint*.

Inflammation of Liver, Causes of.—Acute inflammation is excited by all the usual causes of inflammation. People of a choleric and melancholic temperament are most liable to it; and it is far more frequent in hot than in cold or temperate climates. Exposure to the rays of a vertical sun, and to the damps of the night in sultry climates, are two of its most frequent causes.

Inflammation of Liver, Symptoms of.—If the disease is very acute, it commences with the ordinary symptoms of chilliness, succeeded by heat, frequent, hard pulse, and a furred tongue; the bowels are irregular, mostly costive; the evacuations little tinged with bile; the urine often saffron-coloured; the skin dry; the thirst extreme; with occasional sickness. When the symptoms are most severe, and we have reason to suspect that the disease is confined to the membranes, the duration is often short, and the termination is, in most cases, favourable. But when less active, and seated in the substance of the liver, it generally tends to suppuration; and if the convex side of the liver be the part affected, a tumour is visible externally, the cough becomes aggravated, and there is a difficulty of breathing. If adhesions have preceded the suppuration, the pus points to the skin, and the abscess opens on the surface; but if it break internally, it generally proves fatal by inducing a hectic fever; though sometimes, in consequence of fortunate adhesions, the abscess discharges itself into the hepatic duct, which terminates in the first intestine, and the pus (matter) is carried off by this channel.

Inflammation of the Lungs.—
See PNEUMONIA.

Influence of Rest on Mind.—
See REST, INFLUENCE OF, ON MIND.

Influence of Saliva in Digestive Process.—*See* SALIVA, INFLUENCE OF, IN DIGESTIVE PROCESS.

Influence of the Passions and Emotions.—*See* PASSIONS AND EMOTIONS, INFLUENCE OF THE.

Influences of Vitiated Air.—*See* VITIATED AIR, INFLUENCES OF.

Influenza (*Ital. influenza*, influence).

—Influenza is a specific and epidemic fever which chiefly attacks the lining membrane of the nose, larynx, and bronchial tubes, lasting from four to eight days, and not preserving the individual from a future attack. This disease has occurred in various countries at different times, and has received a vast number of names; in the 17th century it appeared in Italy and first received the name of “influenza,” because it was attributed to the influence of the stars. The area attacked has also much varied in extent; sometimes only part of a country has been affected; at other times it has spread over a great part of the civilized world. One of the earliest recorded epidemics in England appears to have taken place in 1510; since that time this country has been invaded by it about a dozen times, the last severe one being in 1847. A disease is said to be “endemic” when it is confined to a small area, as a village or town; “epidemic” when it spreads over a country; “pandemic” when it invades a large portion of the earth’s surface.

Influenza occurs in both an epidemic and pandemic form. The poison seems to be conveyed by the air, and persons at a distance from land may become attacked. Attacking a community, the disorder generally remains among them from six to eight weeks, but occasionally it has remained longer; the epidemic will completely disappear then for a time; nor is it usual to find an occasional case breaking out in the interval of epidemics. It is common to hear people complain in the winter of having an influenza cold, but this is a mis-

application of the word. The onset of the disease is generally very rapid, while the decline is more gradual, and may last several weeks.

Various physical conditions have been supposed to influence the outbreak of this disease. Volcanic eruptions were once thought to be a cause, but there has been no trustworthy evidence of this; soil seems to have no effect, for the complaint has appeared in every variety of country, in high lands as well as in low lands, in hill countries as in marshes and plains. Nor does the time of the year seem to have any effect, since it has been prevalent at all seasons. There is, also, no connection between temperature and influenza; it occurs in high as in low temperatures, nor does any sudden variation of cold or heat seem to produce any effect. Moisture also has no apparent influence, nor is there evidence at present that any atmospheric condition has effect on this disorder. The intercourse of human beings does appear to have an influence on the disorder; thus, an affected person coming into a village seems to be a centre from which the disease spreads; nevertheless it is very remarkable that thousands may be attacked in the same town in the course of a few hours, while in other contagious disorders the progress is much slower. In this disease, as in other contagious diseases, there seems to be a period of incubation, when the poison seems, for a time, to be latent in the system before any of the marked symptoms declare themselves, and although, in most cases, persons seem to be suddenly struck with influenza, yet there is probably a period of incubation, which may be very short and may last for some days. Most people who have suffered from a contagious disease are not liable to a second attack, but in influenza one attack gives no immunity from another, although persons seldom suffer twice in the same epidemic.

Various speculations have been made as to the nature of the exciting causes of this disorder. It cannot arise from contamination of water, as it would then be confined to a particular locality, nor to any kind

of food. The rapid way in which it spreads shows that the poison must exist in and be conveyed from place to place by the air, for in this way alone can we account for the rapid transmission of the disorder. But as to the nature of the poison in the air nothing at all is known; were it a gas, it would become diluted by mixing with air and lose its virulence; but this is not the case in influenza, nor does it seem to be made of organic matter, or to be suspended mineral matter. One thing seems clear, that the poison can multiply in the air and reproduce itself. Nor can the poison be accounted for by the presence of fungi in the air, for warmth, moisture, and organic effluvia favour the growth of these minute organisms, but seem to have no effect on influenza. Race and sex seem to be equally attacked by the disease; the young are said to be less liable to it than old people. Overcrowded habitations seem in some epidemics to have increased the mortality, and places which are low, damp, and badly ventilated appear to predispose to it.

Influenza, Symptoms of.—The symptoms vary in severity in different epidemics, and in individual cases. The onset is sudden, announced in severe cases by a marked rigour, more often by chill and shivering, alternating with flashes of heat. Then follow general lassitude, debility, nervous prostration, soreness and stiffness of the limbs, pains in the neck, back, and loins, headache, frontal oppression, pain in the cheekbones and root of the nose, injection and sensitiveness of the eyes, with copious flow of tears, sneezing and tingling, followed by watery and often acrid discharge from the nose, soreness of the tonsils, Eustachian tube, and ears, experienced in swallowing, hoarseness, a short, frequent, harassing cough, with slight expectoration, and a slight fever of the remittent kind, having its evacuation towards evening. The fever is seldom pronounced, but the restlessness, irritability, exhaustion, and mental depression are marked, and usually disproportionate to the bronchial complication.

In other cases there is a soreness, tightness, and pain beneath the sternum, sense of suffocation, and danger of capillary bronchitis or pneumonia. These unfortunate complications are the chief causes of death from influenza, and occur mainly in the aged, in invalids, and in delicate children. The usual duration of mild cases is from three to five days, of grave cases from seven to ten days. The termination of the disease is often as sudden as its onset, and frequently occurs with a critical and profuse perspiration or diarrhoea. The mortality from uncomplicated influenza to healthy persons is very slight.

Influenza, Treatment of.—The majority of cases are mild, and require no treatment. A purge on the outset may shorten their duration. More marked cases require a preliminary purgative, a low diet, the avoidance of exposure to cold, resort to hot draughts, as of lemonade or elder-bloom tea, to stimulating foot-baths, to the use of Dover's powder, spiritus mindererii, or other remedies to secure free perspiration, and the relief of bronchial congestion by the inhalation of steam, by ammonia, or by stimulating expectorant. It is essential to proper treatment to remember that blood injection is primary, and bronchitis or pneumonia is secondary; the constitutional disease will admit of depressing remedies, and the speedy termination of the inflammatory complication will follow supporting measures. During epidemics of influenza, the aged and feeble should keep within doors in well-warmed rooms, and partake of quinine, ammonia, and guarded but nourishing diet, as measures of prevention.

Infusions (*Lat. infusus*, poured into; from *in*, into or on; *fundo*, I pour).—Infusions are preparations made by pouring water, either cold or boiling, over vegetable substances so as to extract their principles. The substances to be acted upon are generally prepared by being bruised in a mortar, sliced or coarsely powdered. The time of

infusion varies from ten minutes to two hours, after which the fluid is strained. The following have been found to be useful infusions:—

Cinchona Bark, Infusion of.—Take of yellow cinchona bark, bruised, half an ounce; boiling water, half a pint. Infuse in a covered vessel for two hours, and strain. Dose: one to three tablespoonfuls. This infusion possesses the strengthening properties for which cinchona bark is noted, and may be used during convalescence from acute diseases.

Diuretic Infusion.—Take of dried fox-glove leaves, half a drachm or thirty grains; boiling distilled water, half a pint. Infuse in a covered vessel for an hour, and strain. This infusion is usefully employed as a diuretic, and may be administered in doses from a dessert-spoonful to one or two tablespoonfuls according to circumstances.

Linseed, Infusion of.—Take of linseed half an ounce; liquorice root, sliced, two drachms; boiling water, a pint. Infuse for four hours in a covered vessel, and strain. When taken in large quantities, this infusion acts as a mild diuretic, and is useful in inflammation and irritation of the urinary organs. Honey or sugar candy may be substituted for the liquorice root, and it may be flavoured with lemon, when it will form a useful demulcent drink in recent coughs.

Senna, Compound Infusion of.—Take of senna leaves, an ounce and a half; ginger root, sliced, a drachm; boiling water, a pint. Infuse for an hour in a covered vessel, and strain. This is a safe, stimulating purgative, useful in constipation. Generally, some saline purgative, as Epsom salts, is given along with it, the infusion of senna being made the vehicle. It may be given in doses of one or two ounces.

Infusions, Bitter Tonic.—The following are excellent and simple bitter tonic infusions for household and home use. These preparations may be taken in doses of one or two ounces twice or three times a day. They all act as bitter tonics

and stomachics, and are useful in indigestion and general debility.

Columba.—Take of columba root, cut small, half an ounce; cold distilled water, half a pint; place in a covered vessel for an hour, and strain.

Gentian.—Take of gentian root, sliced, half an ounce; dried orange peel, bruised, coriander seeds, bruised, of each a drachm; boiling water, twelve ounces. Macerate for an hour in a covered vessel, and strain.

Quassia.—Take of quassia chips, a drachm; cold distilled water, half a pint. Macerate in a covered vessel for half an hour, and strain.

Inhalation (*Lat. inhalo, I draw in; from, in into; halo, I breathe*).—This is a method of introducing remedies into the system which has only recently come into vogue. Some of the substances given in this way are nominally in a gaseous state, and only reduced to the fluid condition for the sake of convenience in stowage. Such is nitrous oxide, the favourite dental anæsthetic. Others, again, are substances which very readily pass from the fluid to vaporous condition; such are chloroform and ether. These substances are used to deaden pain or overcome sensibility generally; but what are technically termed inhalations are substances which, nominally solid or fluid, can be made to evaporate, and so act, as local medications to the lungs and air tubes. Conium, creasote, and hydrocyanic acid are given this way. To enable the substances to be volatilized, and these, too, at a suitable temperature, proper vessels have been made called inhalers. The best hitherto seen is the invention of Dr. Morell Mackenzie. It consists of earthenware. An outer vessel containing water, and an inner, with a tube, containing the volatile material to be inhaled. The outer vessel is filled with hot water and suffered to cool to 100° F. The tube of the inhaler is then applied to the lips, and inhalation goes on. The heat is kept up by an ordinary Child's light. This apparatus answers well, but it is rather expen-

sive. The patient should be told to put some of the material to be inhaled in a jug with hot water, to place it close to the mouth, and cover head and all with a towel. The plan answers well. The smoking of stramonium, fumigation by sulphurous acid, and inhaling the fumes of nitrate of potash paper, are all modifications of this process.

Injuries from Accidents.—*See* ACCIDENTS, INJURIES FROM.

Injuries from Atmospheric Changes.—*See* ATMOSPHERIC CHANGES, INJURIES FROM.

Injuries from Over-Use of Certain Organs.—*See* OVER-USE OF CERTAIN ORGANS, INJURIES FROM.

In-Knee.—*See* KNOCK KNEE.

Insanity (*Lat. insanus*; from *in*, not; *sanus*, sound).—Insanity or mental derangement is well known to mean unsoundness of mind. There are two states of insanity, and in reality but two. The one state is characterized by an unrestrained behaviour, by an irritability which urges the patient on in an extravagant pursuit of something, real or imaginary, to the ruin of himself, or annoyance of his friends; and ultimately leads him, if opposed in his disordered wishes, to acts of extreme violence. This is what many physicians call *mania* or *madness*; and others the *high state* or *sthenic form* of insanity.

The other state is marked by an unusual lowness, sometimes amounting to despair, a loathing of life and everything connected with it, accompanied, too often, by an uncontrollable effort of the patient to rescue himself, by his own hand, from his real or imaginary distresses. This is the *melancholy* of some authors, and the *low* or *asthenic form* of insanity of others.

From this division it will be seen that mental derangement is generally divided by medical men into *madness* and *melancholy*, and we shall therefore say a little on each

of these heads separately. But first it will be advisable to make a few remarks upon certain points which are equally applicable to both these forms of insanity.

Insanity, Causes of.—The causes of this disease are a changeable climate, subject to great atmospherical vicissitudes; extremes of heat and cold; intense study, especially where the efforts of the mind are directed more exclusively in one channel; intoxication, the excessive ascendancy of the factitious passions, as self-interest, ambition, pride, avarice; the struggle between the principles of religion, morality, and education on the one hand, and the passions on the other; hereditary disposition; childbirth; menstrual irregularities; epilepsy, a fruitful source; the abuse of mercury, etc.

The passions and motions most productive of this complaint are love, fear, fright, rage, ambition, reverses of fortune, and, the greatest of all, domestic chagrin or family dissension. The combination of moral and physical causes is much more commonly the origin of insanity than either of them singly. Some medical men consider moral causes to predominate far, in number and force, over the physical; others look on bodily disease as the chief foundation of the complaint in the generality of instances.

Whether the derangement assume the form of madness or melancholy is owing rather to the constitutional disposition of the individual affected than to the nature of the exciting cause; for the causes above noticed are alike applicable to both forms of the disease, sometimes giving rise to one modification, and sometimes to the other.

The causes of insanity do not always act directly on the brain; more frequently, on the contrary, they are preying on some organ at a distance.

The disease is either continued, intermittent, or remittent. A certain change in the countenance, with a sense of general lassitude, sleep, natural appetite, softness of skin, freedom of the secretions and excretions, and a return of moral feeling, are

indicative of approaching recovery. This will be perfect, if with the return of reason the patient resumes his usual affections, habits, and general character. But if, on the other hand, the sleep, the appetite, the secretions and excretions come back to their usual healthy standard, without a corresponding sanity of mind, the disease is likely to pass into a chronic state, or fatuity itself.

Insanity, Curability of.—Cures are effected in about one in three cases. It is in the first month that there is the greatest probability of success. It would appear that in the first two years of insanity the greatest number of cures are performed; that the medium curable period is somewhat less than a year; that after the third year there is not above one in thirty cured. The most favourable epoch of life for cure of the disease is between the age of twenty and thirty. After fifty there is little chance. Madness is more frequently cured than melancholy.

In all mental aberrations, if bodily indisposition is not apparent, the chances of cure is hereby diminished.

"It is a well-established fact," says Dr. Forbes Winslow, in his "Obscure Diseases of the Brain and Mind," "that seventy, if not eighty, per cent. of cases of insanity admit of easy and speedy cure, if treated in the early stage, provided there be no strong constitutional predisposition to cerebral and mental affections, or existing cranial malformation; and even when an hereditary taint exists, derangement of mind generally yields to the steady and persevering administration of therapeutic agents, combined with judicious moral measures, provided the first symptoms of the malady be fully recognised, and the cerebral condition, without loss of time, combated by remedial treatment."

Insects in the Ear.—Great and immediate annoyance is occasioned both to adults and children by the entrance of insects into the ear. It happens now and

then that flies, ants, bed-bugs, small roaches, and the like, get into the ear. Most commonly it is a fly that gets into the ears of children. This will cause great fright and considerable pain, and sometimes the peculiar irritation in the ear may produce a convulsion. Here both syringing and the use of sweet-oil come into good service, since they will tend not only to smother but to remove the offender.

Insects, Poisonous.—See POISONOUS INSECTS.

Insects, Stings and Bites of.—

Insects and other small fry of the woods and waters occasion great inconvenience by the inflammation which they set up in the skin. It has been seen that they not infrequently produce nettle-rash. The sting or bite of most of these creatures produces at the spot a wheal, which in appearance and in the symptoms which attend it, closely resembles nettle-rash, differing, in truth, only in the fact of its being a local trouble. At the summit of such swellings the puncture made by the insect may usually be observed. Trifling constitutional disturbances, with a little transient fever, may co-exist, especially in children. This, as a rule, speedily subsides, along with the local difficulty. Many persons once inconvenienced by such irritation are free from it for the season, the subsequent attacks of mosquitoes and so on resulting in much less distressing consequences thenceforth. About the eyelids, and in persons of feeble health, these wounds occasionally give rise to abscesses, which must be opened and treated in the usual way.

The wheals thus produced are to be treated by lotion of vinegar, alcohol, ammonia, and the like. Soda solutions, of the strength of one or two drachms, steadily mopped on, will be found to be fully as useful as any other remedy. A preparation of one part of menthol in ten parts of alcohol is also recommended.

Ticks are to be removed by pouring on them a drop of oil. They must never be

forcibly removed, lest some part be left on the skin to keep up the trouble. It is important to avoid scratching and other irritation of the wounds made by insects, as it intensifies the suffering, and retards their healing.

Persons camping out in the wilderness are apt to suffer from the attacks of black flies during the early months of summer. The effect of their bites is similar to that of the mosquito. In the later months the harvest-mite is troublesome in cultivated regions, attacking the legs and feet. The last may, to some extent, be escaped by using some aromatic oil.

Insomnia (*Lat.* *insomnia*, sleeplessness; from *in*, not; *somnus*, sleep).—Persons actively engaged in literary pursuits, whose occupations absorb a large amount of nervous energy, are subject to conditions of insomnia. It is said that Paganini rarely slept, so entirely was his mind occupied night and day in his intense passion for music. Boerhaave is recorded not to have closed his eyes in sleep for a period of six weeks, in consequence of his brain being overwrought by intense thought on a profound subject of study. There is no symptom, when viewed in relation to the health of the brain and mind, that requires more careful and unremitting attention than that of insomnia, or wakefulness. It is one of the most constant concomitants of some types of incipient brain disease, and, in many cases, a certain forerunner of insanity!

Inspiration.—See DIAPHRAGM.

Intellectual Power, Prudent Use of (*Lat.* *intellectus*, discriminated or understood; from *intelligo*, I understand; from *inter*, between; *lego*, I choose).—There can be no doubt that mental activity is highly favourable to physical health and development, when systematically regulated and directed into useful channels; but the irresistible logic of fact teaches us that, however we may repudiate the dangerous

quicksands of materialism, we shall have the most success in the development and preservation of intellectual power if we look upon it for educational and hygienic purposes merely, as a real force capable, like that residing in the muscles, of being strengthened by judicious exercise, temporarily exhausted by fatigue, and debilitated or even utterly broken down and wrecked, by too prolonged or continuous exertion.

In the training of children, therefore, to secure for them sound minds in sound bodies, we must be equally careful to make brain and muscle alike the recipients of ample nourishment, judicious exercise, and suitable repose. It was said by Sir William Temple that "the vigour of the mind decays with that of the body—and not only humour and invention, but even judgment and resolution, change and languish, with ill constitution of body and of health."

Duly regulated intellectual labour seems, as a rule, to conduce to longevity, and it was formerly a sort of proverb that "one of the rewards of philosophy is long life." Homer, Pythagoras, Galen, and many others of the ancient philosophers, exceeded the threescore years and ten allotted to man by the inspired Psalmist, and the intellectual giants of modern times have been in many cases blessed in a remarkable degree with long life.

But brain work, to be thus beneficial, must be regulated with the most scrupulous care, for nothing can be more foolish than the mistakes which ministers, lawyers, physicians, merchants, and mechanics so often make of disregarding the hygienic laws which they strictly obey in regard to muscular exertion, and acting as if their brains were quite indestructible, and perfectly competent to continue as long, or as constantly in operation, as their own wishes or necessities may require. "As a consequence of such habits," remarks, with great truth, one of our best authorities on this subject, "it is not strange that every form of mental infirmity should have increased among us of late to an extent that has no parallel in former times. In the prime of life, in the

midst of usefulness, men suddenly break down with their brains, to employ a popular phrase, 'used up' by insanity, paralysis, etc., and this with a frequency which is full of instruction, if we would only heed the lesson. Paralytic affections, which were once comparatively rare, and attributed in great part to hereditary predisposition or sensual indulgences, now occur in multitudes who have no family taint, apparently enjoy good health, and have from childhood been regular and temperate in all their physical habits. Indeed, were we to indicate that feature in the mental constitution of our times which distinguishes it from all others, it would be a large proportion of *cerebral affections*."

That excessive exercise of the mind is injurious to the body is constantly seen in the lean, pale, shrivelled aspect of hard students. Thus *Cæsar* says :—

"Let me have men about me that are fat;
Sleek-headed men, and such as sleep o' nights;
Yond' Cassius has a lean and hungry look—
He thinks too much."

Intellectual Work, How Many Hours a Day for.—

In order to arrive at some definite conclusion as to the portion of each twenty-four hours which may, on an average, be safely spent in intellectual labour, it is important to determine at what time of life the mind of man is in its prime; and from what has been shown by special inquiries on this point, it would appear that the period of each individual's existence, extending from thirty years to forty-five on the side of age, is that in which the body enjoys a maximum of vigour and power of endurance, and it is during this same period that the history of studious men leads us to believe that the mind displays similar attributes. Hence, after the age of forty-five, or, at any rate, of fifty years, every brain worker should, without waiting to be warned by the premonitory signs of decay in the great tool of his trade, systematically diminish the amount of labour which he calls upon it to perform,

The great question of how a man may use his brain without endangering its health, and consequently its practical efficiency, constitutes a separate problem, however, which must be worked out for each individual case independently, because, although there are often instances where it is easy to say this or that person is over-taxing his powers, it is impossible to fix upon any general rule which would not require too much of some or too little of others. Endeavouring to make all due allowance for this difference, we may say that few individuals, even in the prime of their mental and physical vigour, can exceed six hours a day of close mental application without seriously endangering their health, and that for most persons prudence would direct that not more than five or even four hours daily should be thus employed except as an occasional effort to meet special emergencies.

Intense devotion to study for ten or twelve hours daily, if kept up for months or even for weeks, has, as a rule, no real advantage, even if the brain should happen to escape permanent injury, because the memory and reasoning powers become so exhausted by fatigue that they actually assimilate fewer ideas than they would do if not so unjustly overtaxed.

No more mournful example of punishment for wilful violation of the "six hours' law" given above, can be found in recent times than that of Sir Walter Scott, who, while in his prime, used to declare that six hours daily was all he could profitably spend upon his wonderful literary compositions. In later years, when, for the purpose of relieving his pecuniary embarrassments, he was induced to exceed this limit, his brain-power became exhausted with the excessive toil to which it was goaded, and his towering intellect tottered to its fall.

Intemperance, a Disease (*Lat. intemperans, without restraint; from in, not; tempero, I restrain myself*).—Intemperance in the use of stimulants and narcotics is quite frequently a disease, or a symptom of cerebral disorder of some kind,

induced by the use of other substances, or inherited. Like other diseases of the brain, it may be inherited—may skip over two or three generations and break out in a family that supposed it had long been delivered from its presence.

Like other chronic nervous diseases, it is very obstinate and sometimes utterly incurable. Like other chronic brain diseases, it needs both physical and metaphysical medical treatment—medicine for the congested or exhausted brain, as well as rest, relaxation, advice, care, watchfulness, exhortation, and in some cases compulsion. Medical or metaphysical treatment alone will not avail to cure it, any more than it will avail to cure epilepsy, or neuralgia, or paralysis, or insanity.

But though intemperance is oftentimes a disease, it is not always so. It appears in two forms: one is a symptom of a diseased state of the brain; the other is a symptom of a viciously organized, but entirely healthy, brain. The one we may call intemperance from disease, the other intemperance from habit, through bad organization and surroundings. Intemperance from disease is the form which is most frequently found among the intellectual and the cultivated; intemperance from a bad organization is the form which is most frequently found among the ignorant and degraded, and among the so-called criminal classes; and yet both forms appear in all grades of life.

Intemperance in Woman.—Intemperance is a matter of sex: women are not so intemperate as men. Abandoned women—thieves and vagabonds—are, like the males of the same class, intemperate. In Liverpool, in one year, more women than men were arrested for intoxication. In London there is not much difference.

Feminine intemperance among the intellectual and refined classes, on the other hand, is one of the rarest of offences in every civilized country; and the newspaper reports to the contrary are nothing more than psychological studies. It would appear that women use less tobacco, and less of many of

the grosser forms of stimulants than men. Her finer organization repels these things, not so much because her moral force is greater, but because her temptation is less.

This remark appears to apply to nearly all countries, but with special force to high civilizations. Among the Greeks and Romans the women used less wine than the men, and in Rome wine-drinking by women was regarded as disreputable.

The comparative exemption of women from intoxication from alcohol among all except the lowest orders is all the more remarkable from the fact that to some other stimulants she is even more addicted than man. Tea and coffee—especially the former—woman worships with far the stronger devotion.

Intemperance, Sir William Gull on.—The following evidence was given before the Select Committee of the House of Lords on Intemperance, in July, 1877, by Sir William Gull:—

“I think that instead of flying to alcohol, as many people do when they are exhausted, they might very well drink water, or that they might very well take food, and would be very much better without the alcohol.”

“What forms of food would come nearest to the place of it in the case of a man fatigued with overwork?”

“If I am fatigued with overwork personally, my food is very simple. I eat the raisins instead of taking the wine. I have had very large experience in that practice for thirty years.”

“Is that the result of your own personal experience, or have you heard it from others?”

“It is my own personal experience, and I have recommended it to my personal friends. It is a limited experience, but I believe that it is a very good and true experience.”

“It is a fallacy to say that a man ought to take a glass of brandy upon a cold morning to keep himself warm?”—“Certainly.”

“We were told by Dr. Brunton that it

acts in a contrary direction?"—"I should say it would."

"Because, bringing up the blood to the capillary vessels on the surface, it would there get cooled?"

"You had better give a man food; I would rather eat my raisins or take some cod-liver oil."

"Is there a difference then between heat and the feeling of heat?"—"Yes."

Intensity of Sleep (*Lat.* *intensus*, stretched out; from *in*, on or in; *tendo*, I stretch).—We must not fall into the error of supposing that the amount of sleep is to be measured by its duration alone, since its intensity is a matter of equal importance. The light doze which is interrupted by the slightest sounds cannot be as renovating as the profound slumbers of those whom no ordinary noise will awaken. It appears, moreover, that independently of any abridgment of proper rest, the oft-repeated sudden interruption of sleep has a specially injurious effect upon the brain. We have not yet been able to determine the exact difference between sleeping and waking, but we do know that the change from the former to the latter ought to be as gradual as on the approaches of sleep. Usually when people are abruptly aroused from profound slumber, the action of the heart becomes quickened or otherwise disturbed by such interruption, and there is frequently a painful and difficult effort in recalling the entire consciousness of the waking state, with the same confused mental feelings as are produced by a sudden surprise of great intensity.

Intensity of Sound.—This depends on the breadth of the waves of sound (*See* PHYSICS, AND PHYSIOLOGY OF HEARING); *pitch*, upon their number in a second; and *quality*, clang-tint or timbre, depends upon the peculiarity and the manner of the occurrence of the sound. Every sound is composed of a number of subordinate or partial tones, as they are called, just as ordinary light is composed of several colours. It is

the number and strength of these partial tones that make the difference in sounds. It is in these that one voice differs from another. The first partial tone is the fundamental tone, the others are the *over-tones*, or the harmonics.

Intermittent Fever.—*See* AGUE.

Intermittent Fever.—*See* FEVER, CHARACTERISTICS OF.

Internal Ear (*Lat.* *internus*, that which is within).—The internal ear is often called the labyrinth, on account of the complexity of its communications. It comprises the vestibule, an anterior part, as implied in its name, and the cochlea, or snail-shell, lying in front of the vestibule; the semi-circular canals which lie behind it, and the auditory nerve, or nerve of hearing, lying beyond, between it and the brain, which sends nerve-branches to it.

Intestine, Large.—*See* LARGE INTESTINE.

Intestine, Small.—*See* SMALL INTESTINE.

Intestines, Inflammation of the.—*See* INFLAMMATION OF THE INTESTINES.

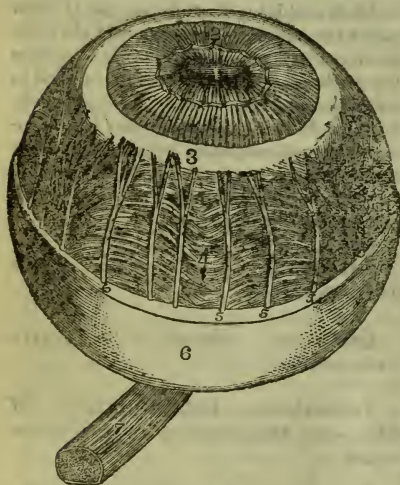
Intoxicated, Treatment of the.—As the effects of intoxication are merely temporary, a supine posture, with the head raised, and a comfortable temperature, are all that are necessary till the symptoms wear off. Should sickness or vomiting ensue, it may be promoted by diluents; but the best remedy in these cases is a refreshing sleep.

After intoxication the body is left in a weak, nervous state, and the stomach, in particular, is much disordered with an excess of acrid secretion. In this case absorbents, such as magnesia, are indicated, and after this some remedies of the strengthening or mild cordial kind may be had recourse to, as warm negus, coffee, etc.

Invalids, Passive Exercise for.
—See EXERCISE, PASSIVE, FOR INVALIDS.

Ipecacuanha Wine.—See MEDICINES, HOME.

Iris (*Lat. iris*, the rainbow).—The iris is acted on by the stimulus of light, which is shown by the contraction of the pupil when a candle is brought near the eye, or when exposed to a strong glare of light. The anterior and posterior chambers of the



IRIS, CILIARY MUSCLE AND CHOROID.

eye communicate through the opening of the pupil. The iris, ciliary muscle, and choroid, are shown in the accompanying illustration. 1 represents the pupil; 2, the iris; 3, the ciliary muscle; 4, the choroid; 5, the ciliary nerves; 6, the remainder of the sclerotic; 7, the optic nerve. The whole of the cornea and part of the sclerotic in this figure have been removed.

Irish Moss.—Irish moss is one of the few marine plants commonly used in Europe as human food. The real Irish moss is *Chondrus crispus*, but other species, such

as *Gigantina mamilliosa*, are often collected with it. Both these plants, together with several similar edible sea-weeds, have much the same dietetic value. The leading constituent of Irish moss is a sort of mucilage, which dissolves to a stiff paste in boiling water. It also contains a little iodine and much sulphur. Irish moss, as sold, contains, according to Professor Church :—

	In 100 parts.	In 1 lb.
	oz.	gr.
Water	18·8	3 3
Albuminoids . .	9·4	1 221
Mucilage, etc. .	55·4	8 378
Cellulose . . .	2·2	0 154
Mineral matter .	14·2	2 119

For 1 part of flesh-formers in Irish moss there are 5 parts of heat-givers, reckoned as starch.

Irish Moss Jelly.—Take an ounce of carrageen, or Irish moss, and boil it in a pint and a half of water, sweeten and acidulate, or mix with milk as in the former case.

Iritis.—Iritis, or inflammation of the iris, often destroys sight by closing the pupil and shutting off the light from the interior of the eye. This very rarely happens if the disease is promptly and skilfully treated, but it is often marked by an accompanying inflammation of the conjunctiva; the patient thinks, perhaps, it is only a cold, and neglects it till the mischief is done. It should always be suspected when, in an acute inflammation of the eye, the sight is decidedly diminished, and there is some pain in the ball, and particularly in the brow. The latter is always more severe at night.

Iron, Particle of, in Eye.—See EYE, PARTICLE OF IRON IN.

Irreducible Hernia.—See HERNIA, IRREDUCIBLE.

Irregular Bones.—See BONES, CLASSIFICATION OF.

Irregularities of the Teeth.—See TEETH, IRREGULARITIES OF THE.

Irritable Condition of Stomach, Powder to Allay Sickness Arising from.—See POWDERS.

Irritative Fever.—See FEVER, CHARACTERISTICS OF.

Isinglass (*Gr.* Hausenblase; from **Hausen**, sturgeon; **Blase**, bladder).—Isinglass is the swimming-bladder or sound of various species of sturgeon cut into fine shreds and dried. Many other fishes yield a similar product. This consists almost entirely of gelatine, so that, when plunged into hot water, it swells up and forms a clear, transparent, shaly solution, which on cooling forms a jelly. Precipitated by tannic acid, the substance forms the basis of leather. The solution is only introduced into the pharmacopœia for separating tannin from gallic acid. It is, however, also used for a totally different purpose; it is dissolved in soups and other articles of diet, gelatine forming the great mass of the jellies so frequently given to invalids. This substance, gelatine, readily dissolves in the stomach, and though its nutritive virtues are not well established, it undoubtedly adds to the feeling of satisfaction a decoction of meat conveys.

Italian Millet.—See MILLET, ITALIAN.

Itch.—See SCABIES.

Itching of the Skin.—See PRURITUS.

Jaundice (*Fr.* jaunisse; from *jaune*, yellow).—This can hardly be looked upon as a separate disease, though, as a symptom of disease, it is so grave and important as to be usually ranked as a distinct malady.

Jaundice, Symptoms of.—The one essential of jaundice is a yellow colour of the skin, due most frequently to an absorption of the colouring matter of the bile and its circulation along with the blood.

Whatever, therefore, obstructs and prevents the flow of bile into the intestines will give rise, sooner or later, to jaundice. Jaundice may occur as a symptom of chronic or acute inflammation of the liver. Fits of anger, fear, or alarm have sometimes been directly followed by an attack of jaundice. The symptoms come on gradually or suddenly. If gradually, then there is progressive loss of appetite, with headache and depression; there is also some nausea and a sense of weight in the stomach. If it come on suddenly, the patient may make the discovery, on looking in the glass of a morning, that he is yellow. This colour is most marked in the whites of the eyes. At the same time, the urine becomes of a rhubarb tint, and stains the linen; whilst the faces are whitish or clay-coloured. The skin itches, and there is a bitter taste in the mouth. Digestion is interfered with, and sometimes every object seen seems of a yellowish hue. Jaundiced people, it is commonly said, see things yellow. This, however, is the exception rather than the rule, and it seems to depend on some enlarged and tortuous vessel crossing the transparent part of the eye when the vision has been previously impaired by disease. When this malady lasts long, the brain-power is weakened, and there may be stupor or delirium; whilst the nutrition of the patient suffers, and he becomes thin and weak. Sometimes there is a tendency to bleed from various parts, and most frequently there is some bleeding. All this may speedily pass away, or become more and more aggravated, till the patient becomes almost black. At the same time there may be excruciating pain, particularly if a gall-stone be the cause of the jaundice; or pain may be entirely absent.

Jaundice, Treatment of.—The treatment to be adopted for the jaundice will depend entirely upon the cause of the obstruction to the flow of bile. But suppose we take a common-case obstruction from catarrh of the bile ducts, or obstruction from emotional causes. This last form of the malady will pass away spontaneously;

but both may be aided by medicines. Of all remedies adapted to the complaint, rhubarb and soda or potash seems best. Then, as there is ordinarily some stomacheic derangement, a little ginger added is an improvement, and some spirit of chloroform aids to make the whole sit easily. Sometimes sulphate of magnesia, with sulphate of soda, does good; but the treatment must vary with each individual case. The food should be light and nutritious, and stimulants should be avoided. If any are required, claret-and-water, or very weak brandy-and-water, is best. Some recommend, in these cases of chronic obstruction, that pigs' bile should be given about the period when stomach digestion has ceased. Doubtless this would aid in the transformation of the food and in the preservation of that which has to be discharged, for the fæces in these cases are not only colourless, but putrescent.

Java, Poison Valley of.—See CARBONIC ACID GAS, FATAL PROPERTIES OF.

Jaw, Dislocation of the.—The jaw is sometimes thrown out of joint by the mere act of yawning; and that accident is reported to have once happened to a gentleman in opening his mouth to make the usual response at church. The word was cut short at the first syllable; for in such cases the chin suddenly drops and is thrown forward, and it is impossible by any effort to shut the mouth. This distressing but irresistibly ludicrous accident may be relieved immediately by any bystander wrapping a napkin round his thumbs and placing them firmly against the back teeth, so as to press them downwards, while with the fingers and palms the chin is steadily raised and pushed backwards. But the operator should be on the alert to withdraw his hands the moment the jaw snaps back into its place, or he may receive a very unpleasant intimation of the success of his efforts.

The accompanying illustration shows inferior maxilla, or lower jaw-bone; *a* is the body; *b, b*, the rami; *c, d*, symphysis menti,

or chin, which marks the place of union of the two halves of the bone in childhood; *d*, the mental process; *e*, mental fossa for the attachment of muscles; *e, f*, the external maxillary line; *g*, the mental foramen for transmitting the mental vessels and nerves; *c, h*, anterior surface of alveolar arch; *a, a*, smooth surface separated from the skin by the platysma myoides muscle; *k*, the mylohyoidean line, called also the internal oblique or internal maxillary line; *d, m*, the inferior border or base of the jaw; *l*, the posterior orifice of the inferior dental canal; *r*, the anterior edge, marked by a groove, which is the continuation of the alveolar border; *n, o*, sigmoid notch; *m*, angle of



LOWER JAW BONE.

the jaw; *n*, the coronoid process; *p*, the condyle.

Non-professional people are sometimes apt to mistake dislocation of the jaw for lock-jaw. When the jaw is dislocated it remains widely open, and the patient is unable to shut his mouth. A laughable instance is recorded of a person singing very loudly at a concert, who suddenly became silent, and was found staring with his mouth wide open. At first people thought he was mad, but at length it was discovered that he had dislocated his jaw.

Jaws, Upper and Lower.—The upper jaw is known as the *superior maxilla*. One half of it is shown in Fig. 1. The lower jaw—called the *inferior maxilla* or mandible, shown in Fig. 2, is the largest and strongest bone of the face. It consists of a curved

horizontal portion (the body), and two upright portions, called the rami (singular ramus, *a branch*). In infancy these upright portions form an obtuse angle with the horizontal portion; in the adult, almost a right angle, the angle becoming again obtuse in old age. It is these modifications in the lower jaw which to a large degree give the characteristic forms to the face in infancy, maturity, and in old age. Fig. 3

but existence is rendered wearisome if we are always anxious about the subject of diet. Some medical men, indeed, have laid very little stress upon it, although others have considered it all-important. Sir Richard Jebb, for example, showed little favour to the digestion, thinking it was made to be used, not nursed. His best set of dietetic directions consisted of the following negative advice, given to an old gentleman who

FIG. 1.—UPPER JAW.

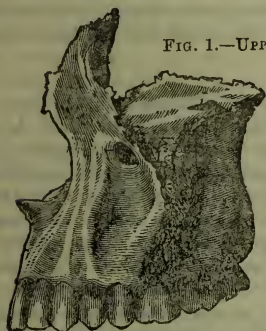


FIG. 2.—LOWER JAW.

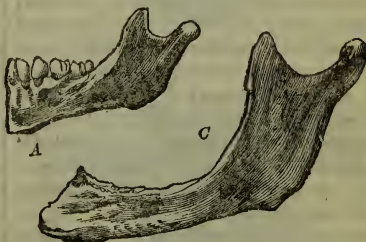
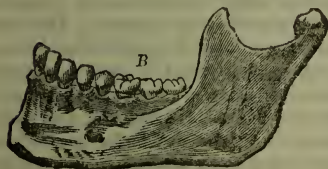
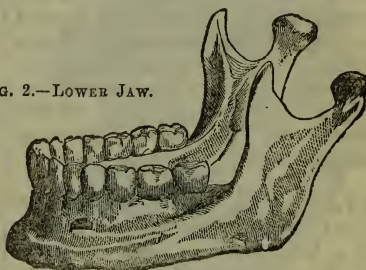


FIG. 3.—LOWER JAW IN INFANCY (A), MATURITY (B), AND OLD AGE (C).

shows the relative forms of the lower jaw at these three periods of life.

The closing of the jaws is effected by four pairs of strong muscles—two attached to the outer, and two to the inner side of the rami of the lower jaw. The peculiar articulation or jointing of the lower jaw in man allows of a variety of movements, in keeping with the diversified character of his food, as well as with other and varied uses.

Jebb on Diet.—It is one thing to be fairly careful about what we eat and drink;

put the everlasting question, “What may I eat?” “My directions, sir, are simple. You must not eat the poker, shovel, nor tongs, for they are hard of digestion, nor the bellows; but anything else you please.”

Jejunum (*Lat.* jejunos, empty).—The second or central portion of the small intestine, between the *duodenum* and the ileum, is called the *jejunum*, because it is generally found empty after death. It is about eight feet long.

Jelly, Calf's-foot.—The error that

calf's-foot jelly is a substance possessed of great nutritive value is one that is very widespread in the popular mind, and people constantly eat it under the impression that they are partaking of an article of diet that is strength-restoring and health-reviving in no ordinary degree. The truth is that the amount of nourishment contained in it is very small indeed.—See GELATINE.

Joint (*Fr.* joint; from *joindre*, to join).—A joint, or “articulation,” as it is sometimes called, is the junction or union of any two adjacent parts of the body. Usually the term is employed to signify the connection established between contiguous bones. It is by the joints that the bones are knit together to form the skeleton. Joints may be either *immovable*, *movable*, or *mixed*.

Joy.—Joy is that state of mind in which there is felt extraordinary pleasure, and in which a high degree of animation takes place. The heart becomes expanded; the circulation is rendered free and vigorous; the eyes sparkle; the nerves feel a sensation connected with complacency and mildness. Hence this state is favourable to the enjoyment and even recovery of health, when it is languishing under diseases of a slow or rooted nature, and of a depressing kind. Of this passion a variety of modifications or degrees occur, under the names of *gaiety*, *cheerfulness*, *mirth*, etc.

The state of mind produced by this passion may be much favoured by a proper attention to the state of the evacuations and also to the regulation of diet. The evacuation by the skin is, in particular, of the first consequence, and the diet should be easy of digestion, of an aperient quality, and in considerable proportion of a vegetable nature. Hence dry air has a considerable influence in producing the state of mind favourable to this passion, and by the circulation being promoted by this benign disposition, a stagnation of the fluids and consequent tendency to obstruction is prevented.

Excessive joy, however, is often attended with severe evils; instantaneous death has

occurred from the immediate and rapid tumult produced in the spirits by its unexpected occurrence. Whenever, therefore, it is carried so far, though even in less degree, as to occasion sleepless nights and great evacuations by the skin, which it is apt to do, then it is necessary to moderate this extreme passion as more dangerous even than grief, which excites the very opposite sensations. It is better where the mind is gradually prepared to meet, from any fortunate cause, the emotions of this passion, by which the effects will be lessened and regulated.

Judgment of Sound.—“One of the marvels of hearing,” says Mr. G. H. Lewes, “is the appreciation of the direction from which sounds proceed. Sensations of touch are referred to particular spots only after multiform experience of the difference in the degree of the sensations excited in various spots. It is the same with hearing. We judge of the distance and direction of the sound by the kind of impression produced. The rumbling of a wagon in the street is thus often mistaken for distant thunder, or the distant thunder is mistaken for the rumbling of a wagon. The voice is known to proceed from above, or below, or behind us, solely by the *kind* of impression produced. How delicate is the susceptibility to shades of difference may best be illustrated by the wonderful accuracy with which blind men thread their way along crowded streets; not only do they learn to recognise the different kinds of persons—policeman, porter, or gentleman—by the sound of the tread, but they learn, it is said, to recognise the difference between a man standing still and a lamp-post at a short distance, simply by means of the reverberations of their own footsteps.”

Kaspar Hauser, The Story of.—The singular story and experiences of this individual, to whose parentage and early career much mystery attaches, has been referred to in considering the subject of “*Impressions of Light*.”

Kaspar Hauser, known as the foundling of Nuremberg, was found, by a citizen of that town, in the market-place, in the afternoon of the 26th of May, 1828. He was dressed like a peasant boy, and, to judge from his appearance, was sixteen or seventeen years of age. He could speak very little, and was almost totally ignorant. In the course of many conversations with him, it came out that from his childhood he had lived in a dark place underground, where he was unable to stretch himself out at full length; that he had been fed upon bread and water by a man who did not show himself, but who cleaned and dressed him, and provided him with food and drink, while he was in a state of natural or artificial sleep. Hauser's narrative gave rise to various suppositions and rumours. According to some, he was the natural son of a priest, or of a young lady of high rank; while others believed him to be of princely origin, or the victim of some dark plot respecting an inheritance. Some incredulous persons believed the whole affair to be an imposture. The history of his education, from the time of his discovery, is remarkable in a pedagogic point of view, as his original desire for knowledge, his extraordinary memory, and acute understanding, decreased in proportion as the sphere of his knowledge extended. Hauser was assassinated under rather extraordinary circumstances in 1833.

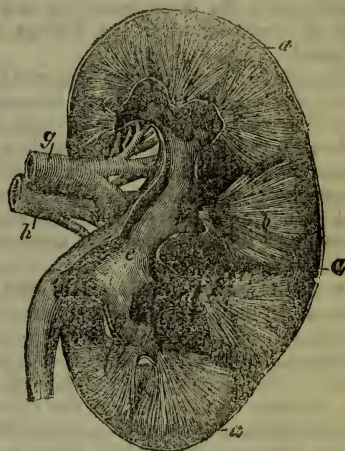
Keeping House Clean.—See HOUSE, HOW TO KEEP HEALTHY.

Keeping out the Cold.—See COLD, KEEPING OUT THE.

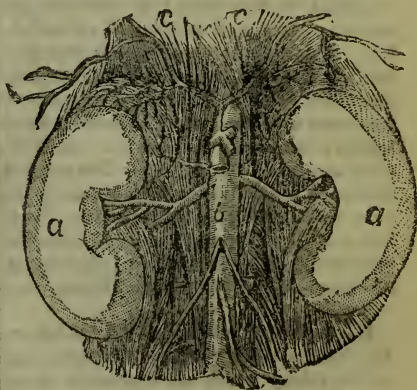
Ketchup.—This is the prepared liquor of the esculent fungus known as the mushroom. It forms an agreeable condiment either used with animal food by itself, or as an addition to sauces. Its junction with the aromatics, with which it is prepared, corrects the quality of the mushroom. In making ketchup much caution is necessary that it be prepared from the proper esculent kind. An imitation of this condiment is made by

an infusion of the outside covering of the walnut, which is little inferior to the real ketchup, and not so dangerous in its effects.

Kidneys.—The kidneys—for there is, or ought to be, two of these organs in each



VERTICAL SECTION OF KIDNEY.



THE KIDNEYS AND THEIR BLOOD-VESSELS.

individual—are of a dark red colour, and resemble in shape the kind of bean known as the kidney bean. They are about four inches long and two and a half inches wide,

are situated one on each side of the spine, in the back and upper part of the abdominal cavity, their upper half stretching across the two lower false ribs, and having their upper end in contact with the lower side of the diaphragm. It is owing to this fact—their contact with the diaphragm—that pain is felt in breathing when the kidneys are inflamed.

The office of the kidneys is to secrete the urine, which is collected in little tubes and poured into what is called the pelvis of the kidney—a cavity in its centre—whence it passes out through the ducts or tubes called the ureters (one leading from each kidney), and is emptied into the bladder, which is situated in the bottom of the abdominal cavity.

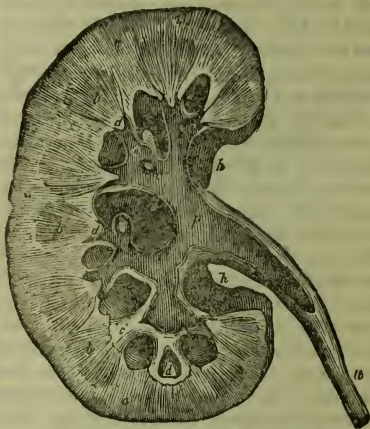
A vertical section of a kidney, showing its internal structure, is given in the illustration on the previous page: *a*, the external or cortical substance; *b*, the broad part of the pyramids; *c*, their apices, projecting into *d*; *d*, the divisions of the pelvis of the kidney, named calyces or infundibula; *e*, the pelvis of the kidney; *f*, the ureter; *g*, the renal artery; *h*, the renal vein. The kidney is composed of two parts: an external or cortical portion, and an internal or medullary. The medullary portion consists of a number of pyramids, called the Malpighian pyramids. The bases of these pyramids are in contact with the cortical substance; their apices project into the calyces, and form what are called the *papillæ*. The cortical substance is surrounded by a fibrous envelope, which closely invests its surface. Each kidney receives its supply of blood from the renal artery, the branches of which enter at the sinus.—See also HEART and KIDNEYS.

Kidneys, Bright's Disease. —

This is a name applied to several affections of the kidney which are dependent on an altered condition of the blood, and generally associated with dropsy and with albumen in the urine. The origin of Bright's disease, indeed, is always in the blood, and that fluid in turn becomes still further altered by becoming contaminated with materials which

ought to pass off by the kidneys, but which are retained in the system; the blood also becomes poor in quality by being daily drained of albumen—one of its most important constituents. Pallor, loss of flesh, debility, and defect in the general nutrition arise from this cause. The disease, which is so called because it was first described by Dr. Bright, may be either acute or chronic.

Kidneys, Bright's Disease, Acute, Symptoms of.—Acute Bright's disease may occur from a cold, from a blow,



VERTICAL SECTIONS OF A KIDNEY.

from taking substances, like turpentine or cantharides, which irritate the kidneys; but more usually it follows some acute febrile disturbance, and more especially it is associated with scarlet fever. About the second or third week after the commencement of scarlet fever, the patient may find his urine of a dark porter colour and rather diminished in quantity: at the same time he may feel lassitude, probably slight pain across the loins, and there may be puffiness of the eyelids and loose part of the skin. If kept in bed, the urine in a few days becomes paler, but still looks very cloudy, and deposits a copious sediment on standing: when

boiled a flocculent precipitate is thrown down because the albumen which is present becomes coagulated. At times convulsions occur, which may be very numerous, and end fatally: at the same time less water is passed.

In the illustration on the previous page *a* is the cortical portion; *b*, the bases of the pyramids; *d*, the apices of the pyramids; *c*, the divisions of the pelvis of the kidney, called *calyces*, into which the apices of the pyramids open; *c'*, a calyx of the kidney unopened; *e*, the papillæ formed by the apices of the pyramids projecting into the calyces; *h*, the hilus, or fissure in the kidney; *p*, the pelvis, or enlargement of the ureter within the sinus; *n*, the ureter.

Kidneys, Bright's Disease, Chronic, Symptoms of.—In chronic Bright's disease the symptoms, other than those supplied by boiling the urine, unless dropsy exists, are, as a rule, so obscure as to be recognised only by the practised physician. Whilst acute cases usually recover under suitable treatment, chronic cases are indeed incurable, though with great attention to health, and judicious professional care and advice, life is in many cases prolonged for several years. In every instance medical aid must be had.

Kidneys, Bright's Disease, Treatment of.—Hot baths do good by causing sweating and giving free action to the excretory power of the skin; they may be given at bed-time and repeated every night: the water should be about 95 deg. Fahr. to 98 deg. Fahr., and the patient may remain in it for from five to ten minutes, then be quickly dried and put to bed. Purgatives should be given, such as compound jalap or compound scammony powder. Rest in bed in a warm room is most important, nor ought the patient to think of leaving his room until all the dropsy and acute symptoms have subsided. Light nourishing food may be taken, as bread and milk, beef-tea, fried sole, broth, a little mutton, rice pudding, arrowroot and gruel.

Kidneys, Bright's Disease, Treatment of, in Convalescence.

—During convalescence great care must be taken to avoid cold. Flannel should be worn next the skin. Moderate exercise may be taken, and a nourishing diet; no stimulants are required in this disease, but after recovery a pint of beer or two glasses of sherry or claret may be taken every day with benefit. Tonics containing iron and quinine will relieve the debility and the anæmia.

Kirschwasser (*Ger.* Kirsch, cherry; *Wasser*, water).—This is the name given to spirit distilled from cherries in Germany, and resembling brandy. From the quantity of prussic acid it contains, extracted from the kernels of the cherry, it is dangerous to take any amount of it inadvertently; but when mixed with water, it forms an agreeable stomachic, and is a good substitute for a better stimulant.

Kitchen.—On the subject of the kitchen the following is quoted from an American writer who has treated with great good sense of the health of the house. "It is a misfortune," he says, "that by the ordinary mode of building houses, the kitchen is made more or less an underground apartment. It is thus generally difficult to secure that supply of air and light especially necessary for a room where there must be a superabundance of heat at all seasons, and an accumulation of various odours to be got rid of, and where the delicate manipulation of the work requires the clearest vision. The kitchen, being placed below the rest of the house, has, moreover, the signal disadvantage of tending to poison with its reeking odours the atmosphere of the whole building. It should be situated if possible on the ground-floor, and contiguous, but not subjacent, to the main structure, and, for convenience sake, closely connected with all the domestic offices, pantries, store-rooms, larders, laundry, and scullery, if the importance of the mansion should admit of each extensive appurtenance. The sinks and

water-supply ought never to be too remote, and it will be convenient to have a special coal-cellar nearer at hand for the cook than the large general depository for fuel.

"The kitchen should be of a simple and regular construction, free from hidden corners and all kinds of nooks favourable to deposits of dust and dirt and the encouragement of slatternliness. The storing away of refuse, vegetables, bones and grease for the expected 'soap and fat' man, is a dangerous practice, for the corruption of such matter generates a variety of ill odours and poisonous gases enough to infect the whole house and cause the most fatal diseases. No cupboards or closets ought to be allowed. A dresser with exposed shelves above, and broadly opening drawers below, is all that is requisite for convenience. This should be made of unpainted white wood, in order that it may invite a daily scrubbing with soap and hot water and be all the better for it. The floor of the kitchen might be of white tiles, and should never be covered with matting or anything like a carpet. The best ornaments are ranges of well-polished tins, bright coppers, clean plates, and a general purity, neatness, and order.

"When the house is of a size to admit of a room apart from the kitchen, it should be appropriated for the use of the cook and other servants during their meals and other temporary moments of relief from work."

Kitchen, Care in the.—See CARE IN THE KITCHEN.

Kleptomania (*Gr.* *klep'tes*, thief; *mania*, madness).—By kleptomania is meant an uncontrollable tendency to steal things when there is no object whatever to be gained by it. Most frequently it seems to manifest itself in ladies of a tolerably good position; but sometimes also it seems to affect gentlemen in easy circumstances. Among them the stealing is taken as a mark of insanity. Stealing by insane persons, which is common enough, is quite another thing. Frequently when thefts are committed by men, especially from the ages of 25 to 40 or 50, it

is one of the early signs of the general paralysis already alluded to. For with such patients stupid acts, like indecent exposure, are early frequent signs of the onset of the disease. There are, too, very considerable numbers of our great body, who really, did they belong to a different class of society, would be included in the ranks of these kleptomaniacs. They are lads originally imbeciles, or nearly so, who have had a thoroughly bad training, and no governing power whatever. These had far better be sent to an asylum at once, than be allowed to prey on society in the wasteful manner which is habitual to them when not locked up. With regard to most cases of so-called kleptomania in ladies, the less said the better.

Knee, Dislocation of the.—In dislocation at the knee, the situation of the displaced bone is obvious to the sight, and extension is to be made upwards by the thigh-bone, and downwards by the fore-leg, while the bones are replaced by pressure with the hand. Compound dislocations of the knee generally demand immediate amputation.



KNEE-JOINT VIEWED FROM BEHIND.

Knee, Sprains of the.—Sprains or ricks of the knee are very common and very painful, setting up great swelling in the articulation. The treatment, of course, depends upon the severity of the injury. If there be much pain and inflammation, leeches, hot fomentations, and poultices; in all cases, perfect rest. Cold lotions, lint soaked in tincture of arnica, and well-applied bandages, are the best methods of curing

the results of the accident. The patient must not get about *too* soon.

Knee-Pan, Fracture of the.— See PATELLA.

Knock-Knee.—One of the most common of deformities is knock-knee, or in-knee (*genu valgum*). This disease is met with in individuals of all ages, and may be described as an in-giving of the knee-joint, in consequence of the weakness of the ligaments and muscles connecting and surrounding the articular extremities of the ilium and tibia. The affection consists in an inward projection of the lower extremities of the thigh-bones, and a more or less considerable outward divergence of the legs and feet. Great deformity is thus produced, and the patient experiences much difficulty in walking. The knees constantly strike against each other, and the foot is turned outwards, so that the inner edge is applied to the ground.

Knock-Knee, Causes of.—Knock-knee is caused by weakness and yielding of the ligaments and sinews about the inner aspect of the joint, and the affection is increased by walking and standing. It is met with in workmen who carry heavy loads, or in those accustomed to wheel heavy barrows. Sometimes tall, rapidly growing lads are the subjects of knock-knee without having had any previous tendency to it; too much exercise, or fatigue, with air breathed in a vitiated atmosphere, seem to be the causes. It may also occur in youths who grow very fast just before the age of puberty; but it affects most commonly weak, unhealthy children of the poor classes, who live in towns, and is due in those subjects to general weakness and poverty of the blood, engendered by bad quality or insufficient supply of food. Indeed, the most common predisposing causes of this malady seem to be insufficiency or improper quality of food, or its imperfect assimilation. "In many instances the earliest link in the chain of causation has been an error in the infant's

diet, namely, the substitution for an insufficient supply of breast milk, of farinacea, boiled in *water*, with the addition of little, if any, cow's milk. Sometimes we may ascend a degree higher, and discover an hereditary pathogenetical influence. It is not an uncommon thing to see knock-knee in small delicate prematurely-born children; the limbs, in consequence of general weakness, having yielded to the superincumbent weight of the trunk. After a while the deformity increases so much that the child becomes incapable of walking without crutches or other support. It often shows itself while the child is still in arms, but is made much more apparent and increases rapidly in extent after the child begins to walk. Knock-knee and rickets are often associated together. When undue use is made of one leg, and too much weight thrown upon it, in consequence of disease or injury in the other limb, one-sided knock-knee may be produced.

Knock-Knee, Treatment of.—This deformity when it occurs in rapidly growing and overworked young people may be remedied by rest and cold douches. If discovered early in infants, the best treatment is fresh air and good and suitable nourishment. The patient should not be allowed to move about on the floor until the unnatural prominences at the inner surface of the knees have disappeared. Slight cases will recover, with proper attention to diet and general health, and the discontinuance of teaching the child to walk prematurely. The recumbent position at times during the day, a soft pad between the condyles of the femur, and the ankles drawn towards each other by a bandage, are useful aids. In more severe cases mechanical contrivances—of splints or irons, such as made by the instrument makers, must be employed. Care must be taken to employ daily friction and manipulation, to prevent the knee becoming stiff in an extended position. Mr. Lonsdale treats knock-knee on the same principle as a crooked rickety leg, "by adapting a long, well-padded splint to the outer side of each

limb, fastening it below by straps and buckles at the outer ankles, and above by a broad belt, to which both splints are attached, and which is buckled round the body at the level of the hollow part of the loins. The splints should be hindered from coming too far forwards, and should bear well against the trochanter and outer ankle. Meanwhile the knee is to be drawn into its proper place by a band, buckled over it, and wide enough to embrace both the head of the tibia and condyles of the femur." In severe cases, in older children, it will be necessary to apply to the outer surface of each limb either a padded wooden splint long enough to extend from the hip to the foot, to which the limb is to be bandaged; or irons, furnished with a ratchet screw, and fixed by means of buckles. The treatment demands much care and patience, and, to be effectual, must, in severe cases, be continued for eighteen months or two years. The deformed limbs should be well rubbed and bathed with cold water every morning, and the child's general health should be kept up by good living, and, if possible, by a prolonged sojourn in the country or by the sea-side.

Koch's Tuberculine or Lymph.

—This newly introduced cure for tuberculosis or consumption, now on its trial, as it may be said, all over the world, is mentioned here because a work of this kind would naturally be deemed incomplete if nothing were said on a subject which has been, during 1890 and 1891, a general topic of conversation. To use Dr. Koch's own words, "the remedy with which the new therapeutic treatment is carried out is a glycerine extract of pure cultivations of tubercle bacilli." This, put in plainer language, amounts to this, that the generation of a certain class of bacilli is set up and promoted in guinea-pigs, that the active curative principle in the bacilli is extracted in a 40 to 50 per cent. solution of glycerine, and that the glycerine extract thus obtained when injected into human beings afflicted with tuberculosis, sets up and

completes a cure, by counteracting the morbid action of the bacilli which produce the disease. This bears a very strong resemblance to the theory of homœopathy. Dr. Koch, the discoverer of the fluid, is, or rather was, Professor of Hygiene at Berlin.

Doctors Hüppe and Scholl, two of Koch's best pupils, without his knowledge, carried out a chemical and biological test of his fluid. They came to the conclusion that it was a mixture of glycerine and products of the assimilation of tubercle bacilli as said above. They then experimented on animals with an extract from tubercle bacilli, got by means of petone, glycerine, common salt, and bouillon, and with this preparation attained the same results as with Dr. Koch's injections.

Professor Virchow, of Berlin, who does not seem to hold Dr. Koch's discovery in very high estimation, in summarizing his opinion on Dr. Koch's lymph, protests against the supposition that he brings forward cases simply in order to speak against the remedy as such. The main thing, he says, is to test the method of its application, and he thinks it will appear that a very definite limit exists where art must stop, and beyond which a restoration of the normal, or even of an endurable condition of the human system, is impossible.

While a remedy for a disease so terrible and unyielding, generally speaking, to the efforts and medicaments of the physician, is yet on its trial, nothing can be said of its actual value, either in a positive or negative form. At a meeting of the Medical Society of Berlin, early in 1891, "Professor Virchow," says the *Medical Press and Circular*, "reported that in the course of his examination of twenty-one persons who had died after Koch's treatment he had observed that the injections cause the bacilli to multiply in the body and to migrate to parts where there were none before; virtually generating a new affection. This is a startling statement, concerning which we shall probably hear more. In the meantime certain Viennese bacteriologists have

subjected the fluid to a searching analysis. They claim to be in a position to affirm that it does not contain any animal alkaloid, and that its effects, such as they are, are due to the presence of a tox-albuminate, suspended, or rather dissolved, in a dilute solution of chloride of sodium. Seeing that tox-albuminates are a numerous class, this information does not add materially to our knowledge. Should Professor Virchow's observations be confirmed, the composition of the fluid will cease to have any importance."

The scientific name given to Dr. Koch's lymph, and by which it is known in the medical profession, is *Tuberculinum Kochii*.

Koumis (*Rus. kumis*).—Koumis is a form of spirituous liquor, made by the Tartars from the milk of mares. The power of yielding this spirit depends on the sugar of milk, which mare's milk contains in considerable quantities.

Labour, Actual.—Actual labour having now set in and the medical attendant having deemed it necessary that the patient should remain in bed, she must take up her position on the left side, in the manner already indicated. If, till now, she has had her dressing-gown on, it should be laid aside.

1. *Frequent Desire to Pass Water.*—About this time also—that is, before labour has advanced very far—there will frequently be experienced a constant desire to pass water, and with the occurrence of each pain a small quantity may be forced from the bladder. These calls to micturition must not be disregarded, and for this purpose the medical attendant will occasionally leave the room. Should this desire to make water not be present, as sometimes occurs when the ordinary duration of labour has been exceeded, the medical attendant should be told of the circumstance, as it may be necessary for him to interfere actively in order to relieve the bladder. If the calls to pass water are unheeded, it accumulates in the bladder, which, becoming distended,

may act as a serious obstacle to the progress of labour. In addition to this, however, there is the possibility that by such neglect an inflammatory state of the bladder may be lighted up, and the foundation of much after-suffering be thus laid.

2. *Cramps of the Leg.*—By pressure of the head upon the nerves which pass to the lower extremities severe cramps of the leg and thigh are apt to be set up as labour advances. They are a source of great annoyance to the patient by reason of the suffering to which they give rise. When this painful condition is present, friction with the warm hand, or by means of a piece of flannel heated at the fire, will generally give relief. Should these fail, friction by means of a little soap liniment may be employed instead.

3. *Sickness.*—Sometimes, also, during the early part of labour a woman may be troubled with sickness and often vomits. Unless the vomiting be accompanied by collapse and a cessation of the labour pains, its effect will be beneficial rather than otherwise.

4. *Duration of Labour.*—"How long will it be till labour is over?" is a question that is frequently put by the lying-in woman to her medical attendant. As this question is one which it is almost impossible to answer, except evasively, it should not be pressed. The duration of labour varies greatly, almost no two cases being exactly alike, and about the most that can be said is that first labours are generally considerably longer in their duration than others.

5. *Food During Labour.*—During the first part of labour no restriction should be put upon the diet, but as labour advances it will be advisable to abstain from solid food altogether. Articles of diet of a fluid nature will now answer much better, and nourishment may be administered from time to time in the form of a little milk or beef-tea. Beyond these there will be nothing else required, unless the patient should complain of thirst, in which case a little cold water, toast-water, or gruel, may be given, and will be found very serviceable for this purpose.

6. *Character of the Pains.*—During the latter part of labour the pains become altered in character; they have now more or less of an expulsive power about them which they did not possess while the dilation of the mouth of the womb was going on. They are now spoken of as *bearing-down* pains, and while they last the muscles of the abdomen are brought into play, and the female, catching hold of something with her hands, and pressing against a fixed point with her feet, bears down, and so assists the expulsive efforts of the womb.

Labour, Preparations for.—Among the principal points to be regarded in preparations for labour, the following require careful consideration and attention.

1. *The Breasts.*—For about six weeks previous to the time the woman expects to be confined she should attend to the condition of her breasts. She should begin to bathe the nipples with a little brandy and water, or eau de Cologne and water, in equal proportions, or with a little tincture of myrrh; she should then expose them for five or ten minutes to the air. By so doing the nipples will be hardened and rendered fit for suckling.

2. *Attendants.*—Some months before the woman is expected to be confined she should consult with her friends, or with her medical attendant, and engage a monthly nurse. Should she undertake this duty without consulting the doctor, she should inquire amongst her friends, and select as nurse a person who is thoroughly qualified for the work. In addition to the nurse, the only other attendants that should be found in the lying-in room are the doctor and a female friend. Generally the patient's mother is the one who is chosen to wait upon her at this time; but there are cases in which it would be better, and greatly to the patient's advantage, were some other person chosen for this office. The medical attendant should be sent for whenever the female becomes conscious of the presence of actual labour pains. In those who have already borne children, we would especially advise

that this be not delayed, because in such cases nature is frequently working quietly for some time, and on the occurrence of a few severe pains the child has been born. It is, at any rate, always safer to call in medical aid too soon than too late, and besides, the doctor will be the best judge as to the length of time labour is likely to occupy, and so can go or remain, as he may think fit.

3. *The Bedroom.*—The room in which the female intends being confined should not be chosen without previous thought. As regards size, the room should be ample, and one which will permit of thorough and efficient ventilation being carried out during the lying-in month. For this purpose it must be provided with an open fire-place. Without this it is quite impossible to carry out any efficient system of ventilation. If the confinement takes place in summer, there will be no necessity to keep the fire burning throughout the lying-in month, unless the weather be cold and damp; but if there is no fire, care must be taken to see that the chimney is not stuffed up, as is frequently done, to prevent the entrance of so much air.

4. *The Bed.*—The best kind of bed to have in the lying-in room is one made of iron. It should not stand above three feet from the ground, and the mattress should be of horse-hair. The fewer curtains there are about the bed the better. A large sheet of mackintosh, or other waterproof material, should be placed above the mattress to protect it, and above this a blanket and then a sheet. Next there should be a folded sheet to place under the patient as a draw-sheet, which is to be removed when labour is over. A sheet or large towel should also be taken and folded so as to form a kind of rope for the patient to pull by when the pains assume a bearing-down character. This should be fastened to the foot of the bed, to one or other side, or it may be fixed to the far corner of the head of the bed if preferred. A small cushion should also be provided, against which the patient may press her feet during the presence of a pain. Neither

the towel nor the cushion should be made use of till the pains have become bearing-down, otherwise the patient may exhaust her strength needlessly, because at a time when such can be of no use.

5. *The Dress of the Female*.—This should consist of a chemise, from which, on going to bed, the patient will withdraw her arms, so that it may be slipped off without difficulty on the completion of labour; a petticoat, which is also to be removed when labour is over. A clean chemise should also be put on when the patient goes to bed. This is to be folded well up under the arm-pits, so that it may not be soiled during delivery, and may be clean and comfortable when drawn down afterwards. Over this the bed-gown should be placed, and folded up in the same manner as the chemise. Over all a dressing-gown may be worn during the early part of labour; but this had better be dispensed with when the patient goes to bed. Some women wear their stays during labour for the purpose of giving themselves support; but as they are useless, and frequently in the way, they should not be kept on.

6. *Position During Labour*.—If now the medical attendant has arrived, or if the pains have become so severe that the patient is unable to remain up longer, she should go to bed. The position she is to occupy is the one in which she will be delivered, and ought to be upon the left side, with the head and shoulders nearly in the centre of the bed, and the hips about a foot distant from the edge. The knees should be drawn up. The patient, when placing herself in bed, must be careful to attend to these rules; they will add materially to her comfort and to that of the medical attendant.

7. *Examination by the Medical Attendant*.—The patient being now in bed, and occupying the position already described, the doctor will request that an examination be made, or that he be allowed to “try a pain,” as it is called. As many young females, from feelings of false delicacy, object to this examination being made, and place their medical attendant in a very awkward

position, a few words of caution may be said with reference to its *necessity*. To make such an examination, indeed, is very necessary, for the following reasons:—1. It enables the medical attendant to ascertain whether or not labour is actually begun, and if it is begun, to what length it has proceeded. 2. It enables him to know whether or not everything is right—that is to say, whether the child is presenting in the most favourable manner; and should anything be wrong, this may be the best opportunity to rectify it, or at any rate it will be the best time for the medical attendant to make up his mind in regard to what he thinks necessary to be done. 3. If everything is right, and labour has already advanced a considerable way, it will give the medical attendant the pleasure of communicating this to the patient, and so relieve her mind of much anxiety.

Labour, Regulation of Hours of.—See HOURS OF LABOUR, REGULATION OF.

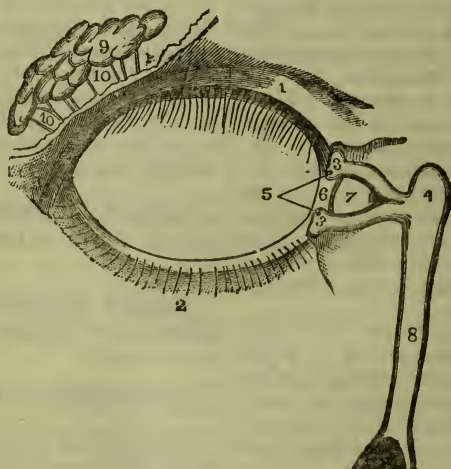
Labour, Treatment of Mother after.—See MOTHER, TREATMENT OF, AFTER LABOUR.

Labyrinth.—See INTERNAL EAR.

Lachrymal Gland and Secretion of Tears (*Lat. lacrima or lacryma*, a tear; *glans, glandis*, an acorn).—Tears are secreted by a gland called the lachrymal gland, which is situated above the eyeball, and underneath the upper eyelid on the side nearest the temple. Six or seven exceedingly fine channels flow from it along and under the surface of the eyelid, discharging their contents a little above the delicate cartilage which supports the lid. It is these channels or canals that carry the tears into the eye. Tears do not flow only at certain moments and under certain circumstances, as might be supposed; their flow is continuous; all day and all night (although less abundantly during sleep) they trickle over the surface of the pupil and eyeball, giving

them that bright enamel, and limpid look which is one of the characteristic signs of health. It is the ceaseless movement and contraction of the eyelids that effect the regular spreading of the tears; and the flow of these has need to be constantly renewed in the way just mentioned, because tears not only evaporate after a few seconds, but also are carried away through two little drains, called lachrymal points, and situated in the corner of the eye near the nose. Thus, all tears, after leaving the eyelids, flow into the nostrils, and if the reader will assure him-

self, *lac, lactis*, milk).—The *lacteals* open on the inner surface of the intestines, and suck up or receive what is called the *chyle*, a milk-like fluid of which the blood is formed, and convey it to what is termed the *thoracic duct*. In their course they perforate the middle and outer coats of the intestines, pass through the mesentery and mesenteric glands, and terminate in this duct. The lacteals are an important set of vessels, for it is through their agency that the chyle, or nutritious part of the food, is separated from the refuse, or innutritious, and conveyed to



THE LACHRYMAL APPARATUS.

self of this, he has only to notice, unpoetical as the fact may be, that a person after crying much is always obliged to make a twofold use of his or her pocket-handkerchief.

In the accompanying engraving the lachrymal apparatus is illustrated. The skin of the lids has been removed. 1 and 2 represent cartilages of lids; 3, lachrymal canals; 4, lachrymal sac; 5, lachrymal puncta, or entrance to canals; 6, conjunctiva; 7, lachrymal lake; 8, nasal duct; 9, lachrymal gland; 10, lachrymal ducts.

Lacteals (*Lat.* lacto, I give milk; from

the blood, to nurture and replenish the system.

Lactometer (*Lat.* lac, lactis, milk; *Gr.* metron, measure).—The lactometer is an instrument for ascertaining the proportion of cream in any given sample of milk. It consists of a glass tube of about half an inch in diameter, marked with a graduated scale. The milk fresh drawn from the cow is left to stand in the glass tube till the cream separates, and the relative proportion the latter bears to the milk is calculated from the readings of the scale. The amount

of cream in different samples of genuine milk varies, but it appears on the average to be about 8 or 9 per cent., and it sometimes reaches and even exceeds 20 per cent. If, however, it is below 5 per cent., it may reasonably be concluded that the milk is adulterated.

Lamb.—Lamb, being less heating and less dense than mutton, is better suited to persons convalescent from acute diseases, but by the majority of persons labouring under indigestion, or other severe affections of the stomach, it is not found so digestible as wether mutton. It is, however, a light and wholesome food, especially when the lamb is not killed too young. A lamb that has been allowed to suck five or six months is fatter and more muscular, and in every respect better, than one which has been killed when two months old, and before its flesh has had time to attain its proper consistency. *House-lamb* is a dish esteemed chiefly because it is unseasonable. Like all animals raised in an unnatural manner, its flesh is immature and unwholesome.

Lamprey.—The lamprey is a small fish, of which two kinds are in use, the sea and the river species. The last is much employed by the Dutch as a bait in their cod fishery. The meat in this fish is white, soft, and nourishing; the largest kind are the best flavoured, and they very much resemble the eel.

Lancaster on Mixed Diet.—*See* VEGETARIAN DIET.

Lancing Drum of Ear.—To those suffering with earache from pent-up matter in the drum, the knife brings the quickest relief. When the matter has formed behind the drumhead, and the latter has not spontaneously burst, it must be perforated. There is no occasion for fear; the surgeon's cut will soon heal, and the drum will be safe. This exhortation seems demanded on account of the widespread, though entirely unjust, prejudice against perforating the inflamed drumhead.

Lancing Gums.—*See* TEETHING OR DENTITION, DIFFICULT.

Landrail.—This migratory bird makes its appearance in England about the same time as the quail—that is, in the months of April and May. On its first arrival it is so lean as scarcely to weigh above five or six ounces; before its departure, however, it has been known to exceed eight ounces, and is then most delicious eating.

Lapwing.—The lapwing is a bird whose flesh is highly palatable and nutritious. It is never domesticated, but killed as soon as caught. It may be better known to many as the green plover, or peewit, having obtained these names from its prevailing colour and the character of its cry. Its eggs, when hard boiled, are of delicious flavour, and are considered a great delicacy. When thus cooked, the white is so clear and pellucid that the yolk is visible through it when the shell has been removed.

Large Intestine (*Lat. intestinus*, internal; from *intus*, within).—The large intestine extends from the end of the small intestine, near the right groin, to the end of the bowels, otherwise the anus. It is about five feet in length, and has the following course: first, it mounts upward from the small intestine to the under side of the liver, passes directly across to the left side of the abdomen, and then descends into the lower part of the abdominal cavity, where it takes a sudden turn, known as the sigmoid flexure, and there becomes the *rectum*, or straight intestine, which is the last portion, and ends in the anus. Mounting upwards in the right side of the abdomen, passing across the upper part and then turning down on the left side, the large intestine folds itself around the small intestine, as one's arms might be put around them. The large intestine is divided into three parts—the cæcum, the colon, and the rectum.

Laryngitis, Acute (*Gr. larungx*, *larunggos*, larynx or upper part of wind-

pipe; *itis*, termination denoting inflammation).—Laryngitis is the name employed to designate inflammation of the larynx. Acute laryngitis is a severe inflammation of the larynx, very apt to be confounded with croup when it occurs in children, and with various other affections in both children and adults. It is exceedingly dangerous to life, because a moderate amount of swelling inseparable from severe inflammation, which would be of much less immediate importance in any other part of the body, is liable here to close up the narrow air passages to such a degree as to interfere with breathing, and thus lead to death by choking or suffocation.

This affection is an inflammation of the lining of the larynx, due usually to sudden exposure to cold in a person subject to severe sore throat, or convalescing from some disease in which the throat has been affected. It also occurs, under similar circumstances, during the chronic sore throat that attends many cases of consumption of the lungs. Sometimes it is due to prolonged or violent screaming, or other excessive use of the voice; sometimes to inhaling some noxious matters in the air; sometimes to extension from some local disease in mouth or jaw, as an inflamed gum during teething and the like. Sometimes it is the result of the poisonous action of certain drugs, when given in excess or injudiciously, especially those containing mercury, antimony, and iodine.

In some cases the inflammatory action is confined to the larynx; in others it is associated with similar disease in the windpipe, or in the upper part of the throat. The great danger in this disease is the formation of a dropsy of the tissues, which become filled with watery fluid which has oozed out of the blood-vessels, and then flap like loose bags upon the top of the windpipe at each inspiration, and so prevent due access of air to the lungs.

Laryngitis, Acute, Symptoms of.—The disease usually begins with a chill, soon followed by fever, and then by sore throat. The patient complains first of pain

in the larynx, which is increased by talking, coughing, or access of cold air to the parts; and there is after awhile a sense of constriction, as if something had gotten into the top of the air passage, or something were squeezing it from the outside. Sometimes there is spasmodic catching of the breath. These signs are soon followed by actual difficulty of breathing. The voice is hoarse, and its exercise often painful. The sounds of breathing become harsh, as in croup. There is a similar sort of cough, too, usually accompanied by expectoration of phlegm or mucus, which gives relief for the time being.

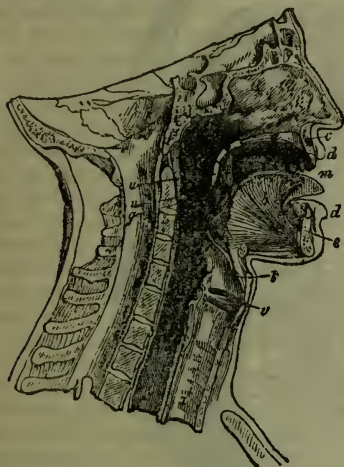
Mild cases usually get well in from five to eight days, or more; but they are liable to become severe suddenly. There is no way of absolutely determining the condition of the parts without examining them by means of a mirror placed in the back part of the throat, so as to reflect the light down (*laryngoscopy*); but the general symptoms and history of the attack are usually sufficient to indicate its nature.

Laryngitis, Acute, Treatment of.—The treatment requires the assiduous care of the physician, and valuable time may be irreparably lost by attempting home treatment. Pending the arrival of a physician, the patient should be put to bed with iced cloths around the throat, and bits of broken ice should be at hand for almost constant use in the mouth; while a smart purge of half an ounce or an ounce of Epsom salts for the adult should be promptly administered, so as to produce one or more full watery evacuations from the bowels.

After recovering from an attack of acute laryngitis, great care should be exercised for some weeks in avoiding everything which might be liable to induce sore throat.

Laryngitis, Chronic.—This is a chronic or long-continued inflammatory disease of the larynx, or larynx and windpipe, which may simply involve the lining and covering mucous membrane, or lubricating

glands in the membrane, or the tissues beneath, including the blood-vessels, nerves, muscles, and even the framework or skeleton of the parts. Sometimes it follows as the result of one or more attacks of the acute inflammatory affection of the same part. Sometimes it is part and parcel of a chronic bronchitis, or inflammation of the air passages generally. Sometimes it is due to over-use or abuse of the voice; sometimes to the irritating effect of dust and other matters inhaled. Sometimes it is part and parcel of a certain variety of consumption of the



CAVITIES OF THE MOUTH AND NOSE.

lungs, in which case it is popularly known as consumption of the throat; but it is not positively known to exist in this form unless the lungs are already in a state of disease.

Chronic laryngitis of all kinds is more frequent in adults than in children, and in males than in females. The accompanying illustration exhibits a vertical section through the head in the antero-posterior direction, showing the cavities of the mouth and nose in their relation to one another; *a*, the arch of the palate; *b*, the tongue; *c*, the velum palati; *d, d*, the lips; *e, e*, the teeth; *f*, the prominence corresponding to the anterior margin of the internal pterygoid muscle;

behind *f*, the anterior pillar of the fauces; *g*, the posterior pillar; *n*, the tonsil; *i*, the epiglottis; *u*, the uvula; *1*, the posterior opening of the nares; *2*, the isthmus of the fauces; *3* is placed opposite the superior opening of the larynx—*1*, showing also the nasal, *2*, the guttural, and *3*, the laryngeal portion of the larynx; *4*, opening of the eustachian tube; *y*, the oesophagus; *v*, the larynx; *x*, the trachea; *t*, the thyroid cartilage.

Laryngitis, Chronic, Symptoms

of.—When the disease is confined to the mucous membrane, it is usually in what is known as the catarrhal form, characterized by an excessive secretion of mucus or phlegm, which is expectorated by coughing. There are occasional or temporary sensations of pain in the parts, with more or less hoarseness, and, in some cases, a certain and variable amount of impairment in swallowing; but the general health is fairly good, unless the amount of secretion is very great and exhausting. The expectoration of mucus is usually greatest on rising from bed in the morning, to evacuate the accumulation over night. The affection is sometimes associated with various forms of chronic sore throat.

The only means by which the disease in its consumptive form can be detected in its earlier stages is by the use of a little mirror passed into the mouth so as to reflect the image of the parts upon its surface. A pallid condition of these parts, with evidence of glandular swelling at the top of the windpipe, always indicates the suspicious character of the affection; and if there is impairment of the lungs, and a consumptive family history, there is rarely any doubt as to its nature.

Laryngitis, Chronic, Treatment

of.—The treatment of the disease consists in all those measures of invigoration which are practised in consumption of the lungs; with such local treatment, by inhalation and otherwise, as the condition of the larynx and windpipe may require. These can only be judiciously instituted under the super-

vision of the physician. Attempts at home treatment, without medical advice, are injudicious, and likely to cause the loss of valuable time; for it is only in its earliest

consumption, when they are due to some other and much more remediable cause.

Laryngoscope (*Gk.* larungx, larung-

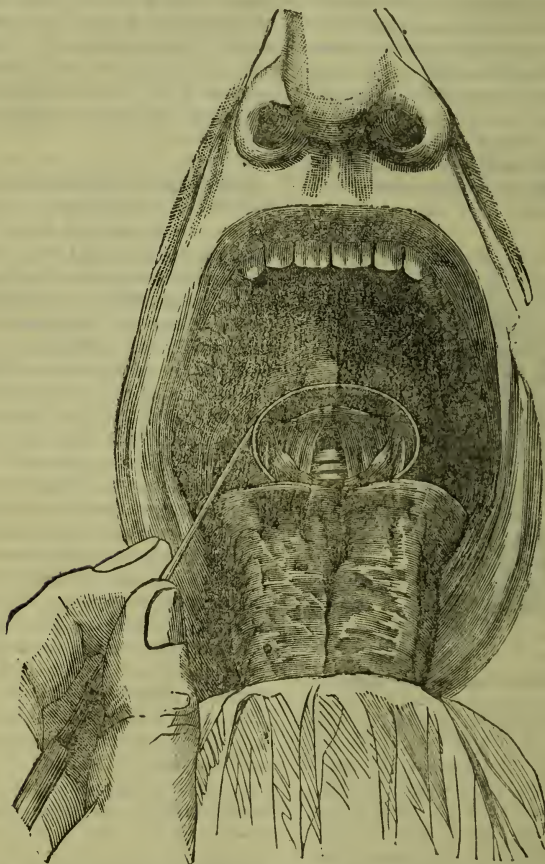


IMAGE OF VOCAL APPARATUS AS SEEN IN A MIRROR HELD FAR BACK IN THE MOUTH.

stages that the disease is at all susceptible of cure.

Many cases of sore throat, with loss of voice, cough, and difficulty in breathing and in swallowing, are attributed to this throat

gos, the upper part of the windpipe; *skoepo*, I view).—To understand the position and character of the vocal cords, we should, if possible, look down upon them from above. The invention of the laryngoscope of Signor

Manuel Garcia enables us to do this. The laryngoscope (larynx-seer) is a simple mirror, which has a handle, and resembles a spoon. It is placed right at the back of the mouth, over the throat. Besides this there is a reflector, which a person operating upon himself holds in front of his mouth, and within view of his eyes. On the first mirror is shown the inside of the throat; the second receives a reflection of the first, and thus the whole machinery of the larynx is exposed to view. The operation is more difficult than it seems; for it is not easy to adjust the mirrors, and keep them in place while singing; and the wide-open mouth that is necessary takes all pleasantness from the tone. First, we may look down and see the glottis, or slit between the cords, open as in breathing. The voice is now silent. Second, we may see the lips or vocal cords vibrating in their whole breadth and thickness, and producing what some voice-trainers (but not all) call the "chest register," but what might rather be called the "thick register," because it is produced by the whole thickness of the cord vibrating. The reader will hardly need to be told that the voice never originates either in the "chest" or the "head," as the nomenclature of some writers and voice-trainers would lead us to suppose. It has its origin always in the vocal cords in the wind-pipe. Third, we may see the thin edges of the vocal cords vibrating alone, and producing what is sometimes called the "falsetto," or "throat" register, but which would be better named the "thin register," because of its being produced by the thin edges of the vocal cords. By means of the laryngoscope, the naked eye may clearly see the fluttering of the vocal cords in the thick register; but in the thin register the vibrations are too rapid to be seen. The cords appear to stand close together.

Larynx.—The larynx, which is guarded by the epiglottis, is the vestibule or entrance into the windpipe (*trachea*). Through the larynx, then, must pass all the air that is drawn into the lungs by inspiration and exhaled from them by expiration. The form

of the larynx, as seen from above, is shown in Fig. 1, from which may be gathered a good idea of the construction of the organ itself, and of the parts of which it is com-

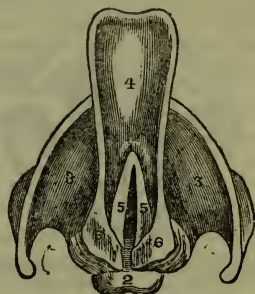


FIG. 1.—BIRD'S-EYE VIEW OF INTERIOR OF HUMAN LARYNX, AS SEEN FROM ABOVE.

posed, or which are in immediate contiguity to it. In this illustration, 2 represents the circoid cartilage; 3, 3, the thyroid cartilage; 4, the epiglottis; 5, 5, the vocal bands; and 6, 6, the arytenoid cartilage.



FIG. 2.—IMAGE OF LARYNX IN RESPIRATION.

Fig. 2 shows the larynx in respiration; 3, 3, thyroid cartilage; 4, epiglottis; 5, 5, vocal bands; 7, 7, ventricular bands.

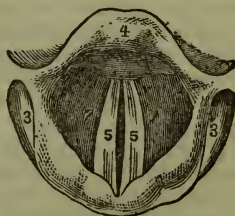


FIG. 3.—IMAGE OF LARYNX IN PHONATION.

In Fig. 3 we have the larynx in phonation.

3, 3, thyroid cartilage; 4, epiglottis; 5, 5, vocal bands; 7, 7, ventricular bands.

The larynx in the production of what are

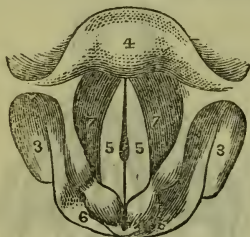


FIG. 4.—IMAGE OF LARYNX IN PRODUCTION OF SO-CALLED HEAD-TONES.

called head-tones is shown in Fig. 4. 3, 3, thyroid cartilage; 4, epiglottis; 5, 5, vocal bands; 6, 6, arytenoid cartilages; 7, 7, ventricular bands.

Latent Heat.—See WARMTH, MATERIAL NECESSARY FOR.

Laudanum (*Lat.* *ladanum*, of which the word “*laudanum*” is a corruption). Poisoning by *laudanum*, which is a preparation of opium, is frequently the mode of escape from life resorted to by suicides, and no doubt because, in certain doses, it is known to produce sleep, stupor, and perfect insensibility. Opium in its various forms being in such continual use as a medicine, is the poison, too, which is most frequently swallowed by mistake; its dangerous and sometimes fatal effects also from an overdose are a frequent consequence of ignorance and rashness.

The symptoms of an overdose are drowsiness, stupor, and an uncontrollable disposition to sleep; and if the quantity taken be sufficient to prove fatal, and no means of relief are resorted to, the state of stupor becomes so great that no efforts are available to arouse the sufferer to consciousness; distressing sickness comes on at intervals, and violent contortions and convulsions at length close the scene.

To opium we have no antidote. The early treatment consists in evacuating the poison

by emetics, and by the stomach-pump, and in arousing the patient to exertion by walking him about, and by every other means in our power; and further in the use of stimulating glysters, which will both rouse the patient, and expel such part of the poison as may have passed into the lower bowel. The secondary treatment, which, be it impressed strongly on your mind, is not only not applicable, but is actually detrimental, till after the efforts made to evacuate the stomach and bowels have been effectual, is the frequent administration of a glass of lemonade or vinegar and water, and a cup of very strong coffee.

When, therefore, you are satisfied that a person has taken this poison, you will immediately give as an emetic, a scruple of sulphate of zinc or white vitriol, or four to ten grains of sulphate of copper, if either are at hand; but if not, three tablespoonfuls of flour of mustard mixed with water, or as much common salt. In the meantime, it is to be hoped that the surgeon has been sent for, with orders to bring that most useful and efficacious instrument, the stomach pump.

When, by either of these means, the stomach has been thoroughly emptied and washed out, and the bowels emptied by two or three copious cathartic glysters, you will proceed to give the acid drink or coffee every quarter or half-hour at first, and then at longer and longer intervals, allowing the patient now to indulge in sleep in these intervals, if the propensity still continues.

We have no chemical tests by which to prove the presence of opium; but the smell of it in the breath of the patient, and more particularly in the matter first thrown off the stomach, will frequently confirm the suspicions excited by the peculiarities of the symptoms.—See also MEDICINES, HOME.

Laughter.—Laughter may be considered as a mode of expressing the passion of joy, and when kept within moderate bounds has much to be said in its favour. It is a wholesome exercise, which, beginning at the lungs, diaphragm, and connected

muscles, is continued to the whole body, "shaking the sides," and causing that jelly-like vibration of the frame of which we are so agreeably conscious when under its influence. The heart beats more briskly, but with a safe regularity of action, and sends the blood to the smallest and most distant vessel. The face glows with warmth and colour, the eye brightens, and the temperature of the whole body is moderately raised. With the universal pleasurable sensation there comes a disposition of every organ to healthy action. When hilarity and its ordinary expression of laughter become habitual, the insensible perspiration of the skin is increased, the breathing quickened, the lungs and chest expanded, the appetite and digestion strengthened, and nutrition consequently increased. The old proverb, "Laugh and grow fat," states a scientific truth. The influence of laughter upon the body is recognised by Shakspeare in his description of the "spare Cassius"—

Seldom he smiles.

"To be free-minded and cheerfully disposed at hours of meat, and sleep, and of exercise, is one of the best precepts of long-lasting." Such is the testimony of Lord Bacon.

Sterne tells us that every time a man laughs he adds something to his life. An eccentric philosopher of the last century used to say that he liked not only to laugh himself, but to see laughter and hear laughter. Dr. Sydenham said the arrival of a merry-andrew in a town was more beneficial to the health of the inhabitants than that of twenty asses loaded with medicine. Mr. Pott, a celebrated surgeon, used to say that he never saw the "Tailor riding to Brentford" without feeling better for a week afterwards.

"A merry heart," says Solomon, "doeth good like a medicine, but sorrow drieth the bones." The moral effect, also, of cheerfulness is not to be despised. It is antagonistic to envy, strife, and all uncharitableness. The devil, said Luther, hates nothing so much as a good laugh.

As we are persuaded that cheerfulness in

childhood is an excellent preparative for the labours of life, and an antidote to many of its ills, we would urge upon parents the importance of cultivating it in their offspring. Even in infancy much can be done towards encouraging the pleasurable emotions.

The early susceptibility of the child to mirth should be, we think, more encouraged than it ordinarily is. Not only would the present enjoyment of youth be thus promoted, but the future happiness of age. There is nothing so requisite for patiently enduring the trials of advanced life as abundant animal spirits, and these are only to be had by laying in a good stock during childhood. Those who are cheerful while young are seldom sad when old.

Laughter, as we have said, is beneficial to the organs of digestion; and, in consequence, has proved the means of relieving pains of the stomach, colic, and several chronic maladies connected with obstruction. The bursting of abscesses, in critical situations, has often happily been effected by this salutary effort.

Laughter, Beneficial Effects of.—It is related that Callimachus was attacked with a dangerous abscess in the chest (probably quinsy), and was thought to be dying; his servants began to divide his goods. A favourite monkey, seeing what was going on, imitated the servants, and put a red cap on his head, with which he entered the room of the dying man. Callimachus, notwithstanding his sufferings, could not refrain from laughing heartily, the consequence of which was a strong vibration of the organs of the chest and the rupture of the abscess, by which his life was saved.

Lavements, or Clysters (*Lat.* lavo, I wash; *Gr.* kluster, from kluzo, I wash).—These used to be looked upon in this country with disgust and horror, and had recourse to only on extraordinary occasions; now they are in common use.

As a means of obviating habitual consti-

pation they are employed by some persons daily, with the effect of exonerating the large intestines more or less. "However efficient they may, in this respect, appear to be, I have found," says Dr. Burne, "from long observation, that they are not free from very great objection. In the first place, they do not continue to relieve the bowels fully and freely for any length of time; in the next place, they do not dispose the bowels to resume their natural action, but, on the contrary, render them more confined; in the third place, they wash off the mucus from the intestines, which is followed by a degree of irritation and an unpleasant sense of heat, very similar to that which occurs after washing the hands in water simply; in the fourth place, the fæces become more scybalous and hard under their use; and, lastly, the individual does not feel the comfort or conviction of having had his bowels fully relieved, on which account he is often induced to resort to a second lavement on the same day. Lavements fail in completely obviating or curing constipation."

Lavements are, nevertheless, an excellent *occasional* resource; where, for example, a person has been disappointed of his usual evacuations, or where he is unable, in consequence of his engagements or of other circumstances, to take an habitual aperient, lest it may act at an inconvenient moment. In their case, a lavement used in the morning relieves the bowels for the day, and is a great comfort. Or if, whilst travelling, the bowels become unusually constipated, and yet it is not convenient, or scarcely possible, to venture on medicine sufficiently strong to act, then a lavement is of essential service, and often prevents absolute indisposition, as I have myself witnessed.

The fluid to be injected should be of a bland nature, as barley-water, thin gruel, linseed tea, or milk and water; but, inasmuch as these are not always at hand, persons, I find, invariably end by using merely warm water, which has an injurious and irritating effect upon the mucous membrane of the rectum. Those in the habit of taking lavements should give attention to this sub-

ject, and make a point of using one of the bland fluids above mentioned.

Cold water is less hurtful to the intestines than warm; half a pint injected every morning has proved of essential service. Cold is an indefinite term, the temperature of what we understand by cold water varying many degrees during the season. In the summer, cold water in the dressing-room would be 60° in temperature; in the winter, it may be as low as 40°; the summer temperature is proper. The quantity injected should vary from half a pint to a pint and a half, which the sensations of the individual must determine.

Law, A, in Medicine.—*See* MEDICINE, A LAW IN.

Laxatives (*Lat. laxo*, I unloose).—Laxatives are remedies which gently open the bowels, so that they are inclined to be loose, but no more. There is thus a distinction drawn between such and purgatives, which purge, and cathartics, which are supposed to act still more strongly. As it is highly desirable in all cases that the least power should be employed, laxatives should be employed when it is necessary to open the bowels artificially, if this will suffice. In many instances, however, they will not, and something stronger will be necessary; but powerful opening medicines are apt to be followed by the very condition they have been used to get rid of, and so the latter end is something worse than the first. Sometimes a change of diet will act as a laxative. Thus, if the food has been too concentrated, that is to say, if there has not been a fair amount of indigestible matter in it, the bowels are apt to become confined. In this way the use of brown bread instead of white bread will often suffice to regulate the bowels and procure a daily motion. Figs and prunes are inclined to be laxative, especially the latter. Manna, tamarinds, and cassia, more so. But the most convenient for use are flowers of sulphur, castor oil, and magnesia, or its carbonate.

Lead, Poisoning by.—Poisoning with lead occurs more frequently from accident than design, and seldom from any other preparations than white lead and sugar of lead, each of these articles being in frequent use in the arts, and the latter being sometimes employed for fraudulent purposes. White lead is the basis of most of the paints commonly employed, and as it affects the human frame injuriously through the lungs and the skin, as well as when taken into the stomach, we often find manufacturers of white lead, plumbers and painters, who are all much exposed to the fumes or emanations of white lead, and also to contact with it in the preparation and use of their paints, seriously and sometimes fatally affected with the disease called painter's colic, which see.

Sugar of lead, which is an acetate of lead, is said to be frequently used to diminish the acidity of light wines, and also in the clarifying of wines and spirits. Goulard's lotion is also an acetate of lead in a liquid state; and these preparations are therefore the occasional sources of poisoning by lead, either through ignorance or mistake. When a large dose of these or other preparations of lead is taken into the stomach, it produces sickness, vomiting, and violent pains, both in the stomach and bowels, like an overdose of corrosive sublimate or other metallic irritant.

Lead, Antidotes for Poisoning by.—The antidotes for poisoning by lead are sulphate of soda or Glauber's salt, sulphate of alumina or alum, and the carbonates of potash or soda, which should be, therefore, administered freely in an abundance of warm water; and if they do not speedily produce vomiting, you may give, as an emetic, the sulphate of zinc, or white vitriol, the proper dose of which is a scruple.

Lead Pipes, How Rendered Safe.—A certain amount of saline impurity, especially of the sulphates and chlorides of the alkaline earths, must be present in order to render river-water safe

from contamination by lead pipes, if these are used for distributing the fluid, as they are in most of our large cities and towns. The way in which these soluble salts act is not by directly preventing the water from dissolving the lead, but by forming with the metal an insoluble coating over the inner surface of the water-pipe, which mechanically precludes the water from having any action on the metallic surface. It is on account of the very purity of rain-water from these saline compounds that lead pipes, or lead-lined cisterns, should never be used for its conveyance or its retention; and many cases of obscure and dangerous illness in country houses have of late years been traced to neglect of this precaution against the entrance of a potent cause of disease into our system.

Lead Colic.—See ACIDS OF PRESERVED FRUITS.

Lead in Water, Test for.—See CHEMICAL TESTS FOR WATER.

Lead Poisoning Through Water.—Some hundred years ago, a curious epidemic, characterized by pain in the stomach and bowels, obstinate constipation, and, later on in the attack, symptoms of palsy, broke out in the city of Amsterdam, for a time baffling the skill of the ablest physicians, until at last it was discovered to be lead-poisoning, due to the substitution of lead for tile roofs, from which the drinking-water was collected. The new-fashioned metallic roofs were soon abandoned, and the epidemic promptly disappeared.

Lead, Poisonous Effects of.—Lead is a very common poison—one of the most common. Its poisonous effects are felt by workers in lead mines, by painters, by those who grind and polish flint glass containing lead, by enamellers, and to some extent by type-founders and printers. Those suffer most who have to do with the process of dry-grinding colours. The "body" which lead gives is so much thicker than

that of zinc that the latter does not as yet supersede it, although the zinc whites are daily becoming better known, and more generally used. The reader may have seen cases of the colic which occurs in lead-poisoning. There is another symptom which is still more disabling, consisting of a palsy of the muscles, usually beginning with those which enable a person to open his fingers and throw the hand back, so that subjects of this palsy go about with their wrists dropping like those of a kangaroo or a begging dog. In fact, it is popularly called wrist-drop.

Lean, How to Grow.—For fat persons to become lean, it is necessary to reverse the process by which lean persons become fat. Bantingism is a term applied to a system of diet by which it is proposed to make fat persons thin, and which succeeded in the case of a Mr. Banting, who wrote a pamphlet on the subject. The great principle recognised in the system is the withdrawal from the diet of those articles of food, such as bread, potatoes, sugar, fat, and butter, which are known, when taken in excess, to produce obesity. If stout persons wish to reduce themselves, they should diminish the quantity of bread, sugar, fat, and butter in their diet, but not suddenly leave off anything to which they have been habituated through a long life.—See BANTING'S DIETARY.

Leaping.—The following is the action of the inferior or lower extremities of the body as explained by Professor William Turner. He says: "In leaping from the standing position, the joints of both lower limbs, previously flexed, are suddenly and simultaneously extended, and the body is projected forward with a rapid impulse."

Leather, Waterproofing for.—
See WATERPROOFING FOR BOOTS, ETC.

Leeches.—Leeches are not now so frequently used in the treatment of disease as they were formerly; but as they are still

employed, a few hints may be given as to the best manner of applying them. There are several kinds of leeches, but the one most generally employed is the olive-coloured leech. It has six longitudinal stripes upon the back; and the quality may be judged of by the readiness with which it contracts into the form of an olive, as well as by its lively movements and brilliant appearance. Leeches vary in size; and the wound which they make is proportionate to this—the large leeches making a larger wound, and the small leeches making a smaller one; so that in the case of children, when the application of leeches is deemed necessary, only those which are small should be made use of. Leeches which have been previously used ought not to be employed in the treatment of disease; they seldom act well a second time; and besides, as leeches take a long time to get thoroughly rid of the blood they have taken, disease may be carried from one person to another. Used leeches may be known by taking and squeezing them from the large to the small end, when, unless several months have elapsed since their former application, they will yield a small quantity of blood. This test is not, however, an infallible one, as the blood may be present from other causes than that mentioned, as, for example, the manner in which they have been caught; but whenever a leech on being squeezed yields blood, it should not be used. When leeches are shedding their skin, they are not of so much value in the treatment of disease.

Leeches, How to make them Take Hold.—When leeches are to be applied to a part, it should first be well washed. If they refuse to take hold, moisten the surface with a little cream, milk, or fresh blood. Sometimes, when they persist in refusing to bite, if they are put into a plate with some beer, and then held firmly by the tail, they will fix themselves almost immediately.

Leeches, to make them Relax Hold.—When leeches have taken their fill,

they usually drop off; but sometimes they will stick on for a long time. In such a case the application of a little salt will cause them readily to relax their hold.

Bleeding may sometimes be kept up from constant movement of the part to which leeches have been applied. Thus, frequently in cases of pleurisy leeches are applied to the sides, and on their removal the constant movement of the ribs during inspiration and expiration sometimes prevents coagulation of the blood in the wounds and leads to hæmorrhage. There are also some parts of the body more liable to bleed freely than others; thus, where the skin is thin, this may occur; and lastly, there are people with a peculiarity of constitution which makes them liable to bleed most profusely on the slightest prick. In such, leeches should be employed with very great caution.

Leeches, Why Applied.—Leeches are applied for the purpose of removing a small quantity of blood from any locality in which it is inconvenient to use any other means of blood-letting, but they should never be applied immediately over a large vein, for fear of inflammation or troublesome bleeding.

Leek.—This green and succulent vegetable is esteemed especially by the Scotch and Welsh. The whole plant, bulb and leaves, may be eaten. It may be simply boiled, or introduced instead of onions (which it reminds one of in point of flavour and composition) into soups and stews.

Left Hand or Right.—See RIGHT HAND OR LEFT.

Legal Rules for Prevention of Contagion.—See CONTAGION, LEGAL RULES FOR PREVENTION OF.

Lemon.—The lemon is the fruit of the *Citrus limonum*, or lemon tree, growing in the more sheltered parts of Southern Europe. Its bark, its juice, and the oil extracted from its fresh peel are all employed

in medicine. The rind contains a valuable oil, which gives the well-known fragrance to the fruit. The oil consists of two isomeric oils mingled. The juice contains a considerable proportion of citric acid, which has by some, but erroneously, been supposed to be the principle on which its value depends. It also contains a considerable quantity of the salts of potass. The preparations properly so called are the syrup and tincture. The peel is fragrant and stomachic, whilst the juice is cooling and possessed of most valuable anti-scorbutic powers. The lemon juice has very frequently lime juice, the product of the *Citrus Limetta*, substituted for it. Lemon juice may be given effervescing along with bicarbonate of potass, and constitutes a very valuable and very refreshing drink for patients ill and parched with thirst. Lemonade, too, made from the lemon sliced into hot water and sugar, is exceedingly refreshing, much more so than is the effervescing lemonade of the shops, which contains only oil of lemon and sugar, instead of the juice of the fruit.

Lemonade.—A small quantity of lemon-juice is very frequently and successfully added to water to render it more grateful and more powerful in allaying the sensation of thirst. The juices of other fruits are also occasionally used to give flavour to water as a beverage, as, for example, of oranges, currants, and raspberries.

Lemon Juice, Use of, at Sea.—Lemon juice and lime juice are powerful agents for preventing or removing scurvy, but as it is now plainly manifest that this malady, whether occurring on land or by sea, is dependent on improper food, it seems going the wrong way to work to prescribe the carrying of this, which is at best a substitute for sound provisions, by merchant ships. The laws, nevertheless, compel all merchant ships to carry lime or lemon juice, if going on a long voyage. Sometimes the captains take it concentrated, in the form of citric acid, which is useless.

Length of Beard.—See BEARD, LENGTH OF.

Length of Hair.—See HAIR, LENGTH OF.

Lentigines.—See FRECKLES.

Lentils.—There is a good deal of useless, fibrous material in the covering of the seed of the lentil. On this covering being removed, the meal which the plant yields is very rich. Usually it contains more casein than peas or beans, but rather less than lupins. Many preparations, extensively advertised for their nutritive properties, contain lentil meal, mixed with some barley or other flour, and common salt. "They are sold," says one authority, "at many times the value of the meal of which they are made up." The composition of lentils is as follows:—

	In 100 parts	oz.	In 1 lb. gr.
Water	14.4	2	140
Casein, etc. . .	24.0	3	366
Starch, etc. . .	49.0	7	408
Fat	2.7	0	183
Cellulose and lignose	6.9	1	45
Mineral matter .	3.0	0	210

Among the Egyptians the lentil was extensively used, and among the Greeks the Stoics had a maxim which declared that "a wise man acts always with reason, and prepares his own lentils." Among the Romans it was not much esteemed, and from them the English have inherited a prejudice against it, for it is certainly not popular in this country, on account, it is said, of its rendering men indolent. It is said to take its name from the Latin word *lentus*, "slow," and, according to Pliny, produces mildness and moderation of temper.

Lesser Passions, The.—See PASSIONS, THE LESSER.

Lettuce (*Lat. lactuca*, lettuce; from *lac, lactis*, milk).—This plant, the *Lactuca sativa*, is well known as a spring and sum-

mer salad, and is very wholesome and good in diet. Lettuces contain little nutriment of any sort, except mineral salts, especially nitre. This and other soluble salts are removed from vegetables which require cooking by the water in which they are boiled. A sleep-producing substance, called *lactucarin*, is found in the stem of the lettuce in small quantities, particularly when the plant is flowering. The composition of the lettuce is as follows:—

	In 100 parts.	oz.	In 1 lb. gr.
Water	96.0	15	156
Albumen . . .	0.6	0	47
Starch, sugar, & gum	1.0	0	113
Leaf-green and fat	0.3	0	16
Cellulose . . .	0.5	0	35
Mineral matter .	1.0	0	70

An insignificant quantity of heat-givers and flesh-formers is found in the lettuce.

From its insipid nature the lettuce is by some little relished, except with the addition of other herbs in the form of a salad, and along with this addition a proportion of egg, oil, and sugar is generally used; the best part of which is the sugar to decompose the other articles. When used by itself the lettuce, from its acescent and refrigerant quality, is reckoned best in the evening, and a condiment should always be joined with it.

Lettuce was famous for the cure of the Emperor Augustus, and formed the opiate of Galen in his old age; a proof that in warmer climates than ours it must acquire an exaltation of its virtues above what is met with in this country.

The different species of the lettuce are capable, in Europe, to a certain degree, of supplying the place of the poppy. The juice of these plants, when collected and dried, considerably resembles opium. Should the stem of the common lettuce, when it is coming into flower, be wounded with a knife, this milky juice exudes. If allowed to stand in the open air, the juice gradually acquires a brown colour, and dries into a friable mass. The odour of this dried juice

is strongly narcotic, and reminds one of that of opium. It has a slightly pungent taste, but, like opium, leaves a permanent bitter in the mouth. It acts upon the brain like opium, and induces sleep. Hence the sound sleep that often ensues after partaking of lettuce at supper.

Leucorrhœa, or Whites (*Gr.* leukos, white; rheo, I flow).—During pregnancy many women suffer from a troublesome discharge which goes by this name. This discharge, although it may exist during the early months of pregnancy, most frequently proves a source of annoyance to the patient in the later months. Like so many of the affections from which the pregnant female suffers, it is produced by the pressure of the enlarged womb, and is the result of the congested state of the parts to which that pressure gives rise.

It manifests itself most severely in the case of those who have had their children rapidly, and whose constitutions are not of the most robust kind. If small in quantity, it may not call for much attention; but if the discharge is great and allowed to go on unchecked, it gives rise to disagreeable excoriation of the external parts from its irritating nature. If it is not very excessive, the employment of a daily injection of tepid water, of water to which some Cond's fluid has been added, or with the addition of one or two teaspoonfuls of powdered alum, will generally serve to keep it in abeyance and relieve the patient of annoyance. Should the discharge be more excessive, the injection must be repeated more frequently, thus, night and morning, or three times a day.

When the discharge is very profuse, the patient must frequently resume the recumbent position, lying every day for two or three hours upon a hair mattress or a sofa, and sleeping at night upon a horse-hair mattress in preference to a feather bed. There must be no overloading with blankets when in bed; rather have too few than too many. The injection must of course be applied as in the less severe forms, and in all cases they must be administered gently, no force

being employed, as it might prove dangerous.

Attention to cleanliness is of paramount importance to any one who is suffering from this affection. Should such remedies as have been mentioned, after receiving a fair trial, prove unavailing in checking the discharge, medical advice should be sought, as a predisposition to miscarriage may be induced if it be allowed to go on unchecked. Attention must also be paid to the general health. The diet should be light, nourishing, and unstimulating. Stimulants of every kind should be avoided. The patient should retire to rest early. The condition of the bowels must also be attended to, and, if constipated, they must be regulated by the administration of some mild laxative.

Liability, Constitutional, to Pulmonary Disease.—See PULMONARY DISEASE, CONSTITUTIONAL LIABILITY TO.

Lichen (*Lat.* lichen; *Gr.* leichen; from leicho, I lick).—Three varieties of the skin disease known as *lichen* are now recognised—*lichen simplex*, *lichen planus* and *ruber*, and *lichen scrofulorum*. *Lichen simplex* is very like papula eczema, and some writers make no distinction between them. It is an eruption of small inflammatory pointed papules, red, and very itchy, located mainly on the extensor surfaces of the limbs; also on the body, mainly on the back.

In *lichen planus* the papules are much larger and are flat on the surface, and may even be slightly depressed in the centre. They are more of a pinkish purple, with whitish top, and have great tendency to become grouped together, forming even quite large patches. They appear often first about the wrists, especially on the inner, or flexor, surface. The eruption is a very chronic one, though quite curable. *Lichen ruber* is the same eruption as *lichen planus*, only much more aggravated.

Nothing is known as regards the actual causation of lichen as far as regards diet, etc.; consequently little can be said for the

lay reader as regards treatment. Lichen is not contagious.—*See also ECZEMA.*

Liebig's Extract of Beef.—This preparation, the nutritive value of which has been considerably over-estimated, is yet an excellent substitute for fresh meat; and in soup fulfils a desirable purpose.—*See EXTRACT OF MEAT.*

Liebig's Extract of Meat.—*See EXTRACT OF MEAT.*

Liebig's Food for Infants.—*See FOOD FOR INFANTS, LIEBIG'S.*

Life.—What is life? and what is the vital power? These questions may be classed among many of the like kind which occur to us during our researches into Nature. They appear simple, and relate to the more common phenomena; but they are difficult to be answered. Whenever the philosopher uses the word "power," one may always be sure that he labours under a difficulty, since he explains a thing by a word which is itself a problem; for who has ever yet combined a clear idea with the word "power"? We must, however, have expressions for things whose existence is undeniable, though their agency be incomprehensible.

The following remarks on this subject are taken from Dr. Hufeland's "Art of Prolonging Life," which is one of the soundest treatises that we possess on the fundamental principles of the science of health:—

The vital power is, without dispute, one of the most general, the most incomprehensible, and the most powerful of all the powers of Nature. It fills and gives motion to everything; and in all probability is the grand source from which all the other powers of the physical, or at least the organized, world proceed. It is that which produces, supports, and renews everything; by it the creation, after so many thousands of years, revives every spring with the same freshness and beauty as when it first came from the hand of its Maker.

It is inexhaustible and infinite—a real eternal emanation of the Deity. In short, it is this which, purified and exalted by a more perfect organization, kindles up the powers of thought and of the soul; and which gives to rational beings, together with life, the sensation and enjoyment of it.

Life in an organized being means the free active state of the vital power (*see VITAL POWER*), and the activity and efficacy of the organs inseparably connected with it. The vital power, therefore, is only a capacity; life itself, action. Every life, consequently, is a continued operation of the efficiency of the power and of organic exertion. A continued consumption of the power and of the organs is necessarily the immediate consequence of this process; and, on that account, an incessant renovation of both is requisite in order that life may be supported. The process of life may then be considered as a continued process of consumption; and its essence may be defined as an uninterrupted wasting and reparation of ourselves.

Life has been already often compared to a flame; and, indeed, the operation in both is the same. Destructive and creative powers are engaged, with never-ceasing activity, in a continual struggle within us; and every moment of our existence is a singular mixture of annihilation and new creation. As long as the vital power retains its freshness and energy, the living plastic powers will have the superiority, and afford it protection in this contest; the body will also increase and approach nearer to perfection. By little and little they will balance each other, and the consumption becoming equal to the renovation, the body will at length decrease. At last, the vital power being lessened and the organs worn out, the consumption will begin to exceed the renovation; and decay, degradation, and in the end a total dissolution, will unavoidably take place.

This is universally the case. Every created being passes through three periods: that of its growth, that of its being stationary, and that of its decline.

Life, Chinese Stages of.—See CHINESE STAGES OF LIFE.

Life, Duration of.—See DURATION OF LIFE.

Life, Duration of, in Various Occupations.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Life, End of.—See END OF LIFE.

Life, March of English Generation through.—See MARCH OF ENGLISH GENERATION THROUGH LIFE.

Life, Pecuniary Value of.—See PECUNIARY VALUE OF LIFE.

Life, Periods of.—The term of human existence is divisible into distinct periods, each of which is distinguished by characters peculiar to itself. These characters, as far as they are external, are obvious to every one; but these external characters depend on internal states which are not obvious, and which have been discovered only by careful and persevering research. And the curious and interesting facts which the researches have disclosed show that the different epochs into which life is divided are not arbitrary distinctions, but arise naturally out of constitutional differences in the system, dependent on different physiological conditions.

The natural epochs of human life are six, namely, the period of infancy, childhood, boyhood or girlhood, adolescence, manhood or womanhood, and old age. The space of time included in the first four of these epochs is fixed. In all persons after the lapse of a certain number of years a definite change in the system uniformly takes place, in consequence of which the peculiarities which distinguish one period give place to those which characterize the succeeding; thus the period of infancy, commencing at birth, extends to the end of the second year, the point of time at which the first dentition is completed; the period of childhood, com-

mencing at the close of the second year, extends to the termination of the seventh or eighth year, the period of time at which the second dentition is completed; the period of boyhood or girlhood extends from the seventh or eighth year to the commencement of the age of puberty—that is in general, in this country, in the female, from the twelfth to the fourteenth year, and for the male, from the fourteenth to the sixteenth year; the period of adolescence extends from the commencement of the period of puberty to the twentieth year of the female, and the twenty-fourth of the male; the period of womanhood extends from the twentieth, and of manhood from the twenty-fourth, to an age neither determined nor determinable with any degree of exactness, because the point of time at which mature age lapses into old age differs with every individual. It differs in many cases by a considerable number of years, and it differs according to primitive constitution, to the management of early infancy and childhood; according to regime, exercise, occupation, physical and mental, and several other circumstances included under the general term *mode of life*.

Life, Warmth and.—See WARMTH AND LIFE.

Ligaments (*Lat.* *ligamentum*, band; from *ligo*, I bind).—Ligaments are strong white fibrous cords, or bands, which connect bones together at the joints and hold them in their places. They are of various breadths, and sometimes they are so interwoven as to form a broad layer which entirely surrounds the joint like a bag. In this case they are called *capsular ligaments*, and serve the purpose also of preventing the escape of the *synovial fluid*, which is intended to lubricate the part. The shoulder joint is surrounded by one of these capsular ligaments. Ligaments also serve to keep the liver, spleen, and other internal organs in their place. Like the bones, they possess but little sensibility when in a healthy state, but when attacked by inflammation they are extremely painful.

Light.—Next in importance to securing for the sick-room a sufficient supply of pure air, it should be our endeavour to see that it is also amply provided with light. There is an Italian proverb which says, "Where the sun does not enter, the doctor does," and another which says, "All disease comes with the shade and gets well by daylight;" and although the language here used may seem to convey a somewhat overdrawn picture to the mind, there is, nevertheless, much of truth in it; and it ought to impress us with the necessity we labour under of giving earnest attention to such matters in the treatment of disease. There are, of course, special cases, such as diseases of the eye, where the plentiful supply of light would prove absolutely injurious; but of these there is no necessity to speak here.

If the light be too strong for the patient's eyes, it can easily be modified by means of a green blind. As light, when excessive, acts as a direct excitant upon the brain and nervous system, it will be the duty of those who wait upon the patient to see that, in acute diseases, where there is nervous excitement, the room is properly darkened, and he is shielded efficiently from what might prove injurious to him; but in cases of debility, in chronic diseases and during convalescence, the sun's rays are ever welcome, and exercise the most beneficial influence alike on mind and body.

The manner in which the bed is placed in the room should be carefully attended to. It must not be so placed that the patient has to strain himself every time he wishes to look out of the window, but must be so situated that he is able to do so without making any effort. It is very important that the patient should be able to see out of the window, and that, if possible, the prospect should be a pleasant one.

At night, care must be taken to place the lamp, or whatever is employed for the purpose of artificial illumination, in such a position that the eye does not suffer. In the case of children, attention to this is very important, for a lamp carelessly placed may cause shadows about a room which may

make the child frightened and uneasy, and exert a hurtful influence upon it. All flickering lights should be at once removed from the sick-room, otherwise their presence cannot fail to have a disturbing influence upon the patient.

Light, Admission of.—Besides air, houses should admit plenty of light. Hence big windows should be procured, if possible; if the light proves troublesome by its excess, it can easily be shut out. The common practice of shutting out the daylight has, ordinarily, for its motives, the saving of the delicacy of tint of superfine carpets and hangings, and of the complexion of the inhabitants of the house, or concealing their want of it. We do not admit either of them to be proper. No one can hesitate to prefer the pure brightness of heaven's light to all the fantastic colours of Paris and Brussels art, and the natural ruddiness of health to the real or affected paleness of fashion.

All denizens of towns should have as many windows as possible in their houses, as well as skylights and other means by which the healthful sun's rays may enter into their dwellings. The peculiar construction of our town houses, necessitated by the long parallelogram of the lots and close junction of the buildings, although not the most favourable to sources of light, is still not necessarily so conducive to darkness as it is often allowed to be.

A less desire to pile up the large masses of masonry which cover every spare inch of a short and narrow bit of ground, and cast heavy shadows, making darkness necessary, and lightness of the interior impracticable, would greatly tend to improvement in the construction of our dwellings. That middle dungeon, between the front parlour and dining-room, in which families are so fond of immuring themselves, would no longer exist, and the health and enjoyment of daily life be greatly increased. Bow-windows might be generally adopted, and the admission of light into the house thus more favoured. The blind, though indispensable, perhaps, in the hotter, should be rarely used

in the cooler, seasons. The impenetrable shades, heavy curtains, and other contrivances for the production of darkness, by which tenacious old ladies, as we have already hinted, strive to hide, and aspiring young ones to improve, their complexions, are not favourable to health, however successful they may be in keeping up the delusions of faded age and the hopes of progressive youth.

Light and Sleep.—Light has a very unfavourable influence in preventing sleep, and therefore complete darkness should be secured as far as possible; if, from any cause, lights in the bed-chamber are necessary, they should be feeble, and the face of a sleeper carefully shaded from their rays. A sunny exposure may be regarded as advantageous to every room, whether used by day or night. As this, however, is not always practicable, it can be dispensed with better in the bed-chamber than elsewhere, as darkness is an essential requisite of the nocturnal abode. Heavy window-curtains, however, are objectionable for the same reason as weighty bed-hangings. An easily movable shade, just sufficient to temper the too intrusive light of dawn or glimmering of the moon, is better than thick drapery of any kind, barred shutters, or close blinds.

Light Clothes in Summer.—“White hats and clothes,” says one writer, “are worn in the summer, because they do not so readily as dark-coloured articles absorb the heat. This is a rational expedient, but it is not so reasonable to forget, when winter comes round, that dark surfaces radiate heat, or allow it to escape as rapidly as they absorb it. At a season when the heat of the body is almost entirely generated and supported from *within*, it seems unaccountable that people should so commonly affect dark clothing. The fact that animals in the cold regions are provided with white furs in winter points to the more judicious selection. The rule is simple enough. When it is wished to take in heat easily, or to give it off rapidly, the

surface should be of a dark hue; when the object is either to keep out the external heat, or to preserve that which is generated within, the colour should be white or light. The practice of putting on the most sombre and depressing garb at a season when everything has a tendency to look gloomy is unnecessary, and considering that it is the reverse of cheery, it might, with advantage to health and spirits, be extensively modified. There could be no difficulty in procuring stuffs for clothing combining sufficient substance and low-conducting material with light and cheerful colours.”

Light, Influence of.—Light, independent of heat, does not seem, when in excess, to have any effect upon our system, except upon the organs of vision. Deficiency of this agent, however, exerts a marked influence in rendering human beings, especially children, dwarfish, stunted, and pallid—obviously wanting in good, rich, red blood. The Italians have an excellent saying, to the effect that, “Where light does not enter, sickness goes in;” and it is probable that even yet we do not fully understand and appreciate the importance of abundance of light, especially to the growing child; although the analogy which many town-bred boys and girls present to the feeble, bleached-out sprouts of a potato developing in a dark cellar, is too close and too painfully suggestive to have escaped general observation.

The power of light to accomplish important steps in the life-history of the lower animals is admirably illustrated by an experiment of Dr. Hammond, in which, by placing a tadpole in a vessel of water secluded from the light, he prevented, for one hundred and twenty days, its development into a frog. At the end of this time the reptile was removed to a jar exposed to light on all sides, when the transformation was at once commenced, and was completed in fifteen days. Another every-day example of the injurious effects of deprivation of light upon vitality may be observed in any of our corn-fields in which isolated trees

occur, the corn within the shade of the tree becoming (although not wholly, yet in a great measure, on this account) weak, small, and unproductive.

Medical men have invariably observed that diseases of all kinds, from the most trifling toothache, quinsy, or rheumatism, to the most severe attack of fever, scrofula, or consumption, are much less manageable in low, dark apartments. And it is notorious that during the prevalence of epidemics, such as cholera, the shaded side of a narrow street invariably exhibits the greatest ratio of fatal cases.

"The observations of Dr. Edwards, on the influence of light in promoting the perfect development of animals, led him to conclude that in climates where nudity is not incompatible with health, exposure of the whole surface of the body to light is favourable to the regular conformation of the body; and he, therefore, has suggested isolation in the open air as a means calculated to restore healthy conformation to children affected with scrofula, whose deviations of form do not appear to be incurable."

Pereira says: "As in bright solar light we feel more active, cheerful, and happy, while obscurity and darkness give rise to a gloomy and depressed condition of mind, so we employ isolation in the open air as a mental stimulus in melancholy, lowness of spirit, and despondency."

All persons, in order to acquire and maintain the best condition of health and strength, should be frequently exposed to the light of the sun, except during oppressive heat. Children are generally badly treated, more especially in cities, in being kept almost entirely excluded from sunshine. Many mothers are fonder of the delicate faces and pale complexions of their little ones, than intelligent in relation to their physiological welfare.

Light Needful to Health.—

Light is almost as important to health as air. Its want is noticeable in those who work in dark workshops and underground kitchens. These have complexions as devoid

of colour as a piece of blanched celery or asparagus, and for exactly the same reason: both have been deprived of light. In the vegetable kingdom light is absolutely necessary to convert the white shoots into green leaves and branches. So, too, in the human being the circulating blood requires an exposure to light to give it its true vivifying qualities. Such individuals, therefore, who have not a due exposure to light, are what is technically called anæmic, and though in some the health seems tolerably good, in others there is a tendency to passive dropsies, owing to what is called thinness of blood, and a want of breath when called upon to undergo exertion. The exact nature of the constitutional change is not known, but probably is connected with some change in the intimate structure of the red corpuscles or the chemistry of their colouring matter, *hæmoglobin*.

"It is the unqualified result of all my experience," says one well entitled to speak of it, "with the sick, that second only to their need of fresh air is their need of light; that, after a close room, what hurts them most is a dark room, and that it is not only light, but direct sunlight they want. You had better carry your patient about after the sun, according to the aspect of the rooms, if circumstances permit, than let him linger in a room when the sun is off. People think that the effect is upon the spirits only. This is by no means the case.

. . . Who has not observed the purifying effect of light, and especially of direct sunlight, upon the air of a room? Here is an observation within everybody's experience. Go into a room where the shutters are always shut (in a sick-room or a bed-room there should never be shutters shut), and though the room be uninhabited, though the air has never been polluted by the breathing of human beings, you will observe a close, musty smell of corrupt air—of air, *i.e.*, unpurified by the effect of the sun's rays. The mustiness of dark rooms and corners, indeed, is proverbial. The cheerfulness of a room, the usefulness of light in treating disease is all-important."

"A dark house," says Miss Nightingale, "is always an unhealthy house, always an ill-aired house, always a dirty house. Want of light stops growth, and promotes scrofula and rickets among children. People lose their health in a dark house, and if they get ill, they cannot get well again in it."

The effect of light on mind and body is thus spoken of by Dr. Moore, the metaphysician:—"A tadpole, confined in darkness, would never become a frog; and an infant, deprived of heaven's free light, will only grow into a shapeless idiot, instead of a beautiful and reasonable being. Hence in the deep dark gorges and ravines of the Swiss Valais, where the direct sunshine never reaches, the hideous prevalence of idiocy startles the traveller. It is a strange melancholy idiocy. Many persons are incapable of articulate speech; some are deaf, some are blind, some labour under all these privations, and all are misshapen in almost every part of the body. I believe that there is in all places a marked difference in the healthiness of houses according to their aspect in regard to the sun, and those are decidedly the healthiest, other things being equal, in which all the rooms are, during some part of the day, fully exposed to the direct light. Epidemics attack inhabitants on the shady side of the street, and totally exempt those on the other side; and even in epidemics such as ague, the morbid influence is often thus partial in its labours."

Lightning Stroke.—A flash of lightning, or rather the so-called electric fluid, will generally strike the most prominent object near it, and if this chance to be a conducting body, it is carried off to the earth and may do no harm; in other cases it may strike the chimney of a house and do serious harm to the walls and inmates, and especially if there is a conduct to the supports which are made of metal and inserted between the stones or bricks to which the wall is made. Death by lightning is instantaneous, and leaves nothing to be done; there is generally a mark as of being burnt, and articles like a watch or coins

may be partially destroyed. At times a man walking along a road is killed; and in these cases it seems to be due to what is called the "back-stroke," a condition in which the discharge of electricity having taken place, the man himself is a conductor of the earth's electricity, being the most prominent object, at that spot, on the earth's surface. A thunder-storm often frightens people most alarmingly, and sometimes temporary blindness will come on, after vivid lightning, in an individual who is not struck. Seventy-four deaths took place from lightning in England in the five years 1865-69.

Light on Retina, Impressions of.—The impression made by light upon the retina not only remains during the whole period of the direct action of the light, but has a certain duration of its own, however short the time during which the light itself lasts. A flash of lightning is practically instantaneous, but the sensation of light produced by that flash endures for an appreciable period. It is found, in fact, that a luminous impression lasts for about one-eighth of a second; whence it follows that if any two luminous impressions are separated by a less interval, they are not distinguished from one another.

For this reason a "Catherine wheel," or a lighted stick turned round very rapidly by the hand, appears as a circle of fire; and the spokes of a coach wheel at speed are not separately visible, but only appear as a sort of opacity, or film, within the tire of the wheel.

Likes and Dislikes.—The smells that are generally disliked are probably just as numerous as the odours that are generally enjoyed. Between the two, however, there is a wide debatable ground in regard to which the utmost diversity of opinion prevails. What is fragrance to one person is sometimes abomination to another. Plutarch tells us that a Spartan lady paid a visit to Berenice, the wife of Dejotarus, but that one of them smelled so much of sweet oint-

ment, and the other of butter, neither of them could endure the other; and it is so still, even among the most cultivated and refined. For although cultivation may very much improve this taste, and though individual constitution modifies, in a certain degree, the effect which odoriferous substances produce upon the organs of smell, yet early habit determines for the most part the judgments we form as to the agreeable and disagreeable.

Lime Water.—*See* MEDICINES, HOME.

Linen.—Linen is the coolest and smoothest of all materials used as clothing. It is the presence of air in a substance that makes it a bad conductor of heat, and this you may realize at once by the different sensation experienced on touching wood and iron.

The use of linen cloth as an inner garment was long considered as a most fortunate discovery, at a time when, owing to neglect of cleanliness, mankind were often extensively afflicted with a number of severe infectious disorders. It is undoubtedly a very useful article of clothing, although it cannot properly be compared in this respect to cotton or wool. Its disadvantages are that it is unfavourable to perspiration, and that it too readily retains the perspirable humours, and therefore, if not very frequently changed, is apt to check the cutaneous excretion, as is proved by the disagreeable cooling sensation produced by a linen shirt when much soiled.

Liniments.—*See* EMBROCATIONS.

Linseed, Infusion of.—*See* INFUSIONS.

Linseed Meal Poultice.—*See* POULTICES.

Linseed Tea.—Take two drachms of liquorice-root bruised, and an ounce of linseed, and put them into a jug with a pint of boiling water. Allow the jug to stand near

the fire for four hours, and then strain through muslin or calico. Take care not to bruise the linseed. This decoction forms a useful demulcent drink in cases of cough and affections of the urinary organs.

Lips.—The lips, which are fleshy folds surrounding the orifice of the mouth, and the cheeks, with which they are continuous, forming the sides of the face and the boundaries of the mouth, are composed of true skin externally, and mucous membrane internally, between which are the muscles which produce their movements; also blood-vessels, nerves, and small bodies called mucous glands, having ducts or tubes opening by minute orifices upon the inner or mucous surfaces. These glands secrete a fluid which helps to lubricate the mouth.

Liqueurs.—These are generally made on the Continent, and are much more frequently used there than with us. They consist of spirits impregnated with a large quantity of fruit, sugar, and aromatic spices: they are, therefore, very hurtful to the stomach, and also soon affect the head. They are the more dangerous from their very palatable taste, which renders them an insidious beverage, by the use of which a habit of tipping is imperceptibly introduced.

Liquor Sanguinis.—*See* BLOOD.

Liver.—The liver, which is a gland and the largest gland in the human body, is of a brown-red colour, and in a healthy grown person weighs nearly four pounds. It is situated in the upper portion of the abdominal cavity, mainly in the right side, under the ribs, and is divided into two principal lobes, called the right and left. Its upper surface is convex, or rounded, and corresponds to the concavity of the diaphragm to which it is attached by several ligaments. Its lower surface is hollow, or concave, and is in connection with the stomach and duodenum. Its right lobe is principally thick and massy, but its left is thin and spreads itself smoothly over the stomach.

In some diseases the liver becomes enlarged and indurated, or hard, and may be felt projecting below the ribs in the right front of the abdomen, and sometimes even on the left. It may, however, be pushed down by the diaphragm so as to appear like an enlargement in diseases of the chest, as dropsy, when the liver itself is not diseased. It is materially altered in its texture by the processes of disease, becoming in some cases quite soft, and in others extremely hard and firm, and in some instances it acquires an enormous size, weighing from ten to twenty pounds.

The liver is supplied with blood-vessels, nerves, and absorbents. With regard to size, it averages from ten to twelve inches long from right to left, and six or seven inches from front to back, while it is about three inches thick in its thickest part, which is at the right end. The liver is held in its position by five strong ligaments, and is in many senses the most important organ of the whole body. It is not difficult to find animals without eyes, without ears, without stomachs, without lungs, without hearts, but it is very difficult to find an animal without a liver. This organ plays a very important part in the economy of all animal bodies. It secretes bile, which is important in the process of digestion. In addition to this, it performs a vital service, viz., it gives birth to blood globules. But besides secreting bile and forming blood globules, the liver has also the power of elaborating from the blood which traverses it a substance called *glycogen* or animal starch. This substance is stored up in the cells of the liver and served out by it in larger or smaller quantities, not in the form of glycogen, but in the form of grape sugar, into which substance it has now become converted. This peculiar change is brought about by the action of a ferment which the liver itself appears to supply, and the grape sugar so formed passes away in the blood to the lungs, where it is burned off.

Liver, Cirrhosis of (*Lat. cirrus, curl*).—Cirrhosis of the liver is the name

given to a disease in which that organ becomes smaller and firmer than usual. It is known most commonly as the "hob-nailed," or "gin-drinker's" liver. Cirrhosis occurs but rarely in children, but is not uncommon in adult life. Amongst the many evils caused by drunkenness, this gradual wasting of an important organ must take its place; in other cases it seems brought about by syphilis, or by other diseases where there has been going on for some time a deterioration of the blood.

Liver, Cirrhosis of, Symptoms of.—This disease is always chronic in its course, and begins somewhat insidiously. Loss of appetite, sour risings from the stomach, a feeling of sickness in the morning, and foetid breath are often the earliest signs; and the skin, in addition, may have a slightly jaundiced colour. The patient may go on for many weeks or months without being much distressed; but he will notice that he is gradually losing flesh, and that his strength is failing. After a time the abdomen will become distended, because the circulation through the liver is obstructed; the patient is then said to have "dropsy of the abdomen." The veins also over the surface of the abdomen become very full, and the skin is marked over with blue ramifying lines. The patient is usually emaciated, and the skin has a sallow, yellow colour; the pinched expression of face and the absence of fat under the skin contrast markedly with the distended abdomen. The patient feels weak, and cannot undergo any exertion; his appetite is bad, and the tongue dry and red; the presence of the dropsy prevents him breathing with ease, and the tightly stretched skin gives him pain; generally, too, the intestines are very full of gas; and so flatulence adds to his discomfort.

Liver, Cirrhosis of, Treatment of.—In the early stage, before dropsy comes on, the patient must abstain from all stimulants; the food he takes must be light and nutrient; cold milk for breakfast is

generally borne well on the stomach, with some dry toast or biscuit or bread soaked in it. Mutton and roast beef may be taken; but pork, salt beef, cheese, pastry and vegetables are not good. If a chop or steak, or a piece from a joint, cannot be taken, strong beef tea, or broth, or chicken, etc., may be given; coffee is better than tea, and cocoa, with milk, forms a pleasant beverage. Rich food and made-up dishes should be avoided. As for the medicinal treatment, that must be left in the hands of the doctor: In many cases careful diet and judicious management may prolong life for many years.

Liver Complaints.—The liver, like the kidneys and other organs, is liable to various acute and chronic diseases. Amongst the *acute* changes may be classed catarrh, or inflammation of the bile ducts, acute atrophy of the liver, congestion and inflammation of the liver, and the presence of gall-stones in the hepatic duct.

Amongst *chronic* changes may be enumerated cancer, cirrhosis, fatty and waxy degeneration, passive congestion, syphilitic deposits, and the presence of hydatid cysts. These are all best entrusted to the regular practitioner.

The liver, weighing from two to four pounds, and situate at the lower edge of the ribs on the right side, is the great wheel of life's machine; it regulates the whole mechanism of man; when it "acts"—that is, works well—then every other wheel, gland, and factor in the system works well, and there is general good health; if it does not work well, which means its becoming torpid, the whole system begins to get out of order; the head aches, there is a bad taste in the mouth of mornings, food does not taste good, there is a poor appetite, the feet are cold, the bowels constipated, the whole body is chilly, and the least thing in the world gives a cold, while there is a miserable feeling all over. Some, but not all of these symptoms are present when the liver is torpid, to say nothing of the mental condition, which is fretful, peevish, complaining, and depressed. The remedy for

this state of affairs is daily riding on a trotting horse, or steady exercise or work in the open air for several hours every day to the extent of causing gentle perspiration.

Liver, Inflammation of the.—
See INFLAMMATION OF THE LIVER.

Living Fast.—This is a phrase in common use among many people, who rarely recognise that it expresses a grim truth in regard to intellectual as well as physical life; for a man can, and often does, live through his physiological capital in fifty years, when, with care, he might have made it last to eighty or ninety. Oftentimes we can have our choice at the outset of life; but the day comes, it may be very soon, when we must decide which pathway we will follow, and then we should remember that all experience proves we cannot live fast and long.

Living Rooms of House.—The living rooms of the house should correspond to the size of the family, and as a rule the bed-rooms should be larger than the sitting-rooms. We pass a great part of our time in bed, not less as a rule than one-third, and during that time most people have the windows shut, so that the air can only change by the chimney, and that too is often stuffed, and any chinks left in the walls or doors. It is desirable, therefore, that the sleeping-rooms should be so large that the total quantity of air they contain cannot become very greatly fouled, even supposing it is not changed during the period devoted to sleep. There can be no doubt that breathing the same air over and over again is unhealthy. The bed-rooms for children should be quite distinct from the day nurseries, and during the day ought to stand with windows and doors wide open from the time they are vacated in the morning until an hour before sunset, except in the coldest weather. Day nurseries should be provided with plenty of light and plenty of air. In cold weather the atmosphere should be maintained at an equal temperature, and should be warm and comfortable, but not too hot. It is a good

plan to regulate the heat by means of a thermometer.

Loaves, Small, better than Large.—It is a sound dietetic observation, that bread, if wished to be as easily digested as possible, should be baked in small loaves. The principal reason for this is that the products of fermentation, which are obstructive to digestion, escape more completely from a small loaf than from a large one. There is, moreover, less necessity for putting the bread into a very hot oven, or for keeping it in the oven so long a time as to deprive the outer part of its nutritive qualities. Bread baked in small loaves is sweeter to the taste than when baked in large loaves; and this is probably because it is more entirely freed from the products of fermentation.

Lobsters.—Lobsters are certainly nutritive; but they are exposed to grave objection on the ground of indigestibility. Lobsters sometimes cause cholera morbus and diarrhoea, especially when they are not thoroughly cooked, and yet they act capriciously enough, for when at public dinners several persons partake freely of them, only a small percentage will be attacked during the following night, but those few may suffer enough for all the rest.

Locality of Eruptions.—See ERUPTIONS, LOCALITY OF.

Long Bones.—See BONES, CLASSIFICATION OF.

Longevity among Professional Men.—According to Dr. Guy, eminent men do not live so long as those who are not distinguished in their profession; collecting several instances, he found the following differences to exist amongst professional men:—

	More distinguished, Averaged.	Less distinguished, Averaged.
Medical men	67'04	67'31
Clergy	66'42	69'49
Lawyers	66'51	68'41
Literary and scientific	65'22	67'55
Artists	64'74	65'96

Longevity in Country, Town, and City.—Observations have also been made with regard to the longevity, of those living in the country, in large towns, and in cities, the longest lives being found in rural districts.

PROBABLE AFTER LIFE-TIME AT ANY AGE. BOTH SEXES. (NEISON.)

Age.	Rural.	Town.	City.
10 . .	53'05	50'74	42'63
20 . .	41'99	42'75	34'53
30 . .	37'78	35'03	28'63
40 . .	30'30	27'64	22'64
50 . .	22'89	20'74	17'33
60 . .	16'61	13'12	13'33
70 . .	10'65	9'13	8'76
80 . .	5'65	5'43	4'81
90 . .	3'22	2'76	2'35
100 . .	'50	'50	'50

Longevity, Relation Between Life and Period of.—"There have been many attempts," says Dr. Gardner, in his work on Longevity, "to determine what is the limit of human life, and various opinions have been advanced based upon data as various. None have appeared so reasonable and so worthy of acceptance as that of M. Flourens, and his views have accordingly attracted much notice.

"M. Flourens conceives he has discovered a fixed relation to exist between the time required for the growth to maturity of an animal body and its ultimate natural duration—all causes of premature mortality excluded. Taking his observations from the group mammalia, of the class vertebrata, as having the closest resemblance to man, and such species as are permitted to live the full term of their natural lives, under circumstances not admitting of error or doubt—the elephant, horse, dog, etc.—he found that their natural life extends exactly to five times the period of their growth. Applying the rule thus obtained to human life, and taking the age when the body is fully matured to be twenty years, he concludes the natural duration of the life of man to be one hundred years."

If these observations and inferences are on the whole well founded, a slight modification must be admitted, since it is highly probable that the time of perfect maturity of growth is not an absolutely fixed but a variable quantity, some individuals attaining it somewhat earlier, some later. It would perhaps be safer to assume that the body has reached its full development and maturity from eighteen to twenty-one. These numbers multiplied by five would bring the natural life of man to be from ninety to one hundred and five years. This conclusion must, we think be regarded as the truth, or at least a very close approximation to the truth—the discovery of a most interesting and important natural fact or law.

The inference necessarily follows that all persons who die under eighty years of age, many who die under ninety, and some who die under one hundred, or even one hundred and five, die prematurely. And this inference is supported by observations made in another direction, for all pathologists agree in stating that few persons indeed die of mere old age. Of those whose lives reach to between eighty and ninety, and even extend beyond ninety, the majority die of diseases which might have been avoided, cured, or kept in abeyance until the full term of human life had been attained.

Longings.—By this term is popularly understood that craving for unnatural and unsuitable articles of diet, such as slate pencil, charcoal, and the like, which many women experience during pregnancy. These longings are frequently of the most fanciful kind, a case being recorded by Smollett, in which a woman desired a hair from her husband's beard, which she wished to pluck herself.

Long Sight.—See *HYPERMETROPIA*.

Long Sight, Glasses for.—See *SPECTACLES*.

Lotion, Application of, by Threads (*Lat.* *lotio*, a washing; from

lotum, to wash; from *lavo*, I wash).—There is a very simple mode of applying the property of the syphon and our knowledge of capillary attraction to the comfort and advantage of a patient who, from an accident, or from ordinary inflammation of a part, or other malady, requires the continued free application of lotion or embrocation. It consists in introducing threads—few or many, from a single thread to a skein of worsted—into a bottle filled with cold water or the required lotion, with one end of the thread or skein hanging from the mouth of the bottle, and then properly suspending the bottle over the effected limb or other part requiring the application. For general purposes, the quantity of worsted should be about the thickness of the little finger. A little ingenuity will devise the most commodious method of suspending the bottle, according to the position and situation of the patient, and the part upon which the fluid is required to be dropping. If the patient be in bed, the bottle may be suspended from one of the curtain-rods, or from a cord or lath of wood, or a long stick laid across the bed from one curtain-rod to another. If the patient be on a sofa or in his chair, the bottle may easily be contrived to be suspended by a stick laid across and fastened to the back of two chairs, or the back of one chair and the sofa. These are schemes to be adopted on the spur of the moment; but the most convenient contrivance of all is a stand, made for the purpose, with a projecting arm, to any part of which the bottle may be suspended, and this arm may be made to rise and fall, and be fastened with a screw, as in the construction of ordinary pole fire-screens. To make use of this contrivance, all that is required is to suspend the bottle directly over the part which is to be subjected to the application of cold, and to draw the end of the worsted sufficiently out of the mouth of the bottle, so that it be somewhat lower than the surface of the fluid in the bottle; or the general direction may be that the worsted touch the bottom on the inside, and be drawn below the

bottom on the outside. The latter portion of the worsted represents the longer leg of a syphon, and the fine threads of which the skein consists, raising the fluid by a capillary attraction, there will be a constant dropping from the end of the worsted upon the affected part as long as any fluid remains in the bottle. To cause a uniform distribution of the lotion over the part to be cooled, and a more extensive surface for evaporation, the scalded or inflamed part should be lightly covered with a single fold of fine cloth.

Lotions.—Lotions are usually applied on lint or rag, which has been previously soaked in the lotion required. If it be desired to produce a cooling effect by the evaporation of the lotion, only one layer of very thin material should be used.

1. *Anodyne Lotion.*—Take of crude opium, two drachms; warm water, a pint. Rub the opium in a mortar with a little of the warm water, for a short time, after which the remainder of the water is to be poured upon it, and all mixed together. This is a useful application to all painful swellings and bruises.

2. *Arnica Lotion.*—Take of tincture of arnica, half an ounce; rose-water, distilled, or common water, to make eight ounces. Dip pieces of rag in the lotion, and apply frequently. Useful in sprains, bruises, etc.

3. *Evaporating Lotion, No. 1.*—A simple evaporating lotion is one part of alcohol to eight of water. Bay rum or eau de Cologne may be substituted for the alcohol. The following is a very good formula: Muriate of ammonia, 12 grains; alcohol, 36 minims; water, 1 oz.

4. *Evaporating Lotion, No. 2.*—Equal parts of vinegar and eau de Cologne or lavender water, diluted with an equal quantity of common water, and used as above.

5. *Evaporating Lotion, No. 3.*—Take of chloride of ammonia (sal ammoniac), half an ounce; nitre, an ounce. Dissolve in water, and apply as a cooling, refrigerating

lotion in recent sprains, bruises, and inflammatory affections of the brain.

6. *Stimulating and Detergent Lotion.*—Take of diluted nitric acid, two drachms; water, a pint. Mix. This lotion is useful in cases of foul, foetid ulcer, when there is a thin ichorous discharge proceeding from it; also in caries of the bone.

Love, What is.—This is said to be the strongest of all the passions that can affect our nature; it is, at least, less under the control of reason than any other; and it is fit it should be so, when we consider that this passion is intended as the principle on which the continuance of the species depends. This passion generally affects the mind by degrees; but it is at the same time, when once rooted, more fixed than any other, and thence the caution that ought to be observed in not giving way to it at an early period, when it is still under the restraint of the will. Hence the just advice of the poet—

With caution and reserve indulge the sweet
destroyer of repose,

Nor court too much the queen of charming
cares;

For, while the cherished poison in your breast
Ferments and maddens, sick with jealousy,
Absence, distrust, or ev'n with anxious joy,
The wholesome appetites and powers of life
dissolve in languor;

The coy stomach loathes
The genial board, your cheerful days are
gone;

The generous bloom that flushed your cheeks
is fled;

To sighs devoted and to tender pains,
Pensive you sit, or solitary stray,
And waste your youth in musing: musing
first

Toy'd into care your unsuspecting heart;
It found a liking there, a sportive love,
Which musing daily strengthens and im-
proves

Through all the heights of fondness and
romance;

And you're undone, the fatal shaft has sped,
If once you doubt whether you love or no:
The body wastes away, the infected mind,
Dissolved in female tenderness, forgets
Each manly virtue, and grows dead to fame.

But while we are thus cautioned against giving way to this passion in an ungovernable degree, it is not to be denied, at the same time, that the best effects are known to follow its reasonable indulgence. An attachment to a beloved object has been known to cure the most obstinate disorders which resisted every other medicine, and it has produced a total change in the powers and disposition of the mind, often for the best purposes, by giving it an ardour and heroism to vanquish every obstacle that may present itself to its desires. It is where this passion is under the necessity of being concealed, and where there is no hope of enjoyment, as in many cases in the female sex, that it proves so detrimental to health and preys with a secret uneasiness on the mind, such as is so beautifully described by Shakspeare when he says—

She never told her love,
But let concealment, like a worm i' the bud,
Feed on her damask cheek; she pined in
thought,

And, with a green and yellow melancholy,
She sat like patience on a monument
Smiling at grief.

Low Diet.—This consists in such a reduced quantity of alimentary matter that the system, so far from being sustained in a state approaching to plethora, is kept below the natural standard, or even made to draw upon its own resources. A strict adherence to this form of diet is of the utmost importance in the treatment of all diseases of an acute inflammatory character; it favours the return of health, which, by its assistance, finds the system in a state best adapted to appropriate with rapidity and advantage the more abundant nourishment which may then be supplied to it.

Lower Jaw.—See **JAWS**.

Lumbago (*Lat.* *lumbus*, loin).—Lumbago is a form of chronic rheumatism, specially affecting the lower part of the back and loins. The pain is sometimes muscular, but sometimes also seems situate in the broad and strong ligament found in that region. Chronic rheumatism is rarely

a malady of youth; it is a totally different complaint from acute rheumatism, and mainly affects old people who have been much exposed to cold and wet. The pain sometimes called lumbago—which may affect young people who stoop much at their work, or who have to raise heavy weights—is merely the pain of tired muscles, and demands the same remedy, rest. True lumbago is quite different; there is no feverishness with it as in acute rheumatism, and it is not relieved by rest as tired muscles are. The individual moves stiffly, as if he were tired, but night and day the pains continue. Sometimes the malady gets better from the application of cold; much more frequently it is improved by heat, so that a roll of flannel means to such positive comfort. There is not much difficulty in the diagnosis; nothing, in fact, can well be confounded with it; but the making of the diagnosis is no great comfort, for the malady is often a most untractable one.

Lumbago, Treatment of.—

Broadly, it may be said that internal remedies are of little use; carbonate of potass is worse than useless, and not unfrequently the iodide is the same. Hot or tepid baths, applied even locally, do good, especially if salt water is used; local applications are, in point of fact, the best remedies in true lumbago, and as a rule they are best applied hot. Sulphur is by many praised as a local remedy, wrapped up in flannel which should be habitually warm. All exposure to damp and cold should be avoided, and the diet should be carefully regulated.

Lumbar Vertebrae (*Lat.* *lumbus*, the loin or haunch; *vertebra*, a joint; from *verto*, I turn).—The name given to that section of the vertebrae of the spine which lies behind the abdomen and between the dorsal vertebrae and sacrum.—See **VERTEBRÆ**.

Lunacy, Law of (*Lat.* *luna*, the moon, because insane persons were supposed

to be affected by the moon's changes).— Finally, we come to what is, perhaps, of most importance to private persons, the law of lunacy—a law which is frequently broken unwittingly, and the breaking of which involves heavy penalties. The care of the person and the care of the property of a lunatic are two totally different matters, and must be discussed separately. So, too, the laws relating to the public and private detention of a lunatic are different, and they

are different with regard to two classes of lunatics, ordinary and chancery. The only persons who may take charge of a lunatic without official interference are such as derive no profit from their charge; if they do, they are liable to a heavy penalty. If the lunatic is to be handed over by his friends to the care of any private individual, then these orders must be signed. The first is the order from the friends, here subjoined:—

FORM I.

Order for the Reception of a Private Patient.

I, the undersigned, hereby request you to receive *Mary Smith*, whom I last saw at *Grove House, Highgate*, on the *thirteenth* day of *March, 1882* (a), a (b) person of unsound mind, as a patient into your house.

Subjoined is a statement respecting the said *Mary Smith*.

(Signed) Name..... *John Smith*,
Occupation (if any) *Builder*.
Place of abode *Grove House, Highgate*.
Degree of relationship (if
any) or other circum- }
stance of connection } *Husband*.
with the patient.....

Dated this *first* of *April*, one thousand eight hundred and *eighty-two*.

To *Thomas Robinson, Esq.*,

(c) *Proprietor*, (d) *Cambridge House Asylum*,
Peckham Rye.

N.B.—These various forms have been given filled up, the *Italics* being the words inserted for this particular case.

The order must be signed by somebody who has seen the patient within a month.

The order should always, if possible, be signed by the nearest relative; but as these often object, a magistrate or clergyman of the parish may do so. But certain people may not sign. First, no one interested pecuniarily in the payments to be made for the lunatic may do so; that is, no one who is paid by a percentage on the payments, or is interested in any other way. For a similar reason neither the medical attendant of the asylum to which the patient is sent, nor any one who has any share in its profits. No

one who is father, brother, son, partner, or assistant to either of the medical men who sign the certificate can make the order. The order itself must be directed to the individual under whose care the patient is to be placed, and under it the individual may detain the patient for one calendar month, but not longer; after that a fresh order has to be made.

A statement (Form II.) accompanies the order. This contains the particulars necessary for the information of the custodian of the lunatic and the Lunacy Commissioners, who superintend all those things. The name

must be given in full, and every detail duly filled in; no blanks must be left, an answer must be given to all. The order and statement are accompanied in most cases by two certificates from medical men, who must be duly qualified and registered. The medical men must visit the patient separately—they must not be partners, nor may one be the assistant of the other. Neither of them

must be proprietor or medical attendant of the house where the lunatic is received; and no medical man whose father, brother, son, partner, or assistant is either wholly or in part proprietor or medical attendant of the asylum to which the patient is sent. Then, too, the signers of the certificate and of the order must have no business or family connection.

FORM II.

Statement referring to the case of Mary Smith.

If any particulars in this statement be not known, the fact is to be so stated.

Name of patient, with Christian name at length	Mary Smith.
Sex and age	Female, 30.
Married, Single, or Widowed	Married.
Condition of life and previous occupation (if any)	Housewife.
Religious Persuasion, so far as known	Church of England.
Previous place of abode	Grove House, Highgate.
Whether first attack	Second.
Age (if known) on first attack	Twenty-five.
Where and when previously under care and treatment	Cambridge House Asylum, in 1867.
Duration of existing attack	One week.
Supposed Cause	Unknown.
Whether subject to epilepsy	No.
Whether succeeding	Yes.
Whether dangerous to others	No.
Whether found lunatic by inquisition, and date of commission or order for inquisition	No.
Special circumstances (if any) preventing the patient being examined before admission separately by two medical practitioners	None.
Name and address of relative to whom notice of death to be sent	John Smith, Grove House, Highgate.

(c) Where the person who signs the statement is not the person who signs the order, the following particulars concerning the person signing are to be added.

(Signed) Name (c) . . .	John Smith.
Occupation (if any)	
Place of abode	
Degree of relationship (if any)	
Or other circumstances of connection with the patient	

The form of the medical certificate is here appended (III.). The medical practitioner must give the name and title of his diploma, and he must state which department of medicine he practises—physician, surgeon, or apothecary. He must be in actual prac-

tice; if retired from the profession, he is unfit to sign. Then, too, the date must be attended to, for the certificate is only good for seven days from the date of examination. In this certificate it is averred that the patient is one or other of three things—

lunatic, idiot, or of unsound mind. These are the only terms the law recognises, and so the latter is commonly used. The reasons for coming to such an opinion must be carefully stated; if they are not sufficient, the Lunacy Commissioners will reject them and

set the patient free. The medical man, too, must be careful to keep apart what he himself has observed, and what others have told him. Moreover, the examination must take place when no other practitioner is present; friends may be present, but no practitioner.

FORM III.

Medical Certificate.

- (a) Set forth the qualification entitling the person certifying to practise as a physician, surgeon, or apothecary: e.g., Fellow of the Royal College of Physicians in London, Licentiate of the Apothecaries' Company, or as the case may be.
 (b) Physician, surgeon, or apothecary, as the case may be.
 (c) Here insert the street and number of the house (if any), or the like particulars.
 (d) Insert residence and profession or occupation (if any) of the lunatic.
 (e) Lunatic, or an idiot, or a person of unsound mind.
 (f) Here state the facts.

I, the undersigned, being (a) a *Member of the Royal College of Physicians in London*, and being in actual practice as (b) a *Physician*, hereby certify that I, on the *thirtieth day of March, 1882*, at (c) *Grove House, Highgate*, in the county of *Middlesex*, separately from any other medical practitioner, personally examined *Mary Smith*, of (d) *Grove House, Highgate, housewife*, and that the said *Mary Smith* is (e) a *person of unsound mind*, and a proper person to be taken charge of and detained under care and treatment, and that I have formed this opinion upon the following grounds, viz.:—

1. Facts indicating insanity observed by myself.

(f) *She labours under delusions that she hears voices summoning her to self-destruction, and sees her mother (who has been dead many years) beckoning her to heaven.*

She is restless and greatly depressed. Her pulse is slow and tongue foul.

2. Other facts (if any) indicating insanity communicated to me by others.

(g) *I am informed by her husband, John Smith, that she has had no sleep for some nights, and has repeatedly and in various ways attempted self-destruction.*

(Signed) Name *Richard Dor, M.R.C.P.*
 Place of abode *304, Harley Street, W.*

Dated this *first* day of *April*, one thousand eight hundred and *eighty-two*.

The orders, statements, and certificates having been despatched, or handed over to the keeper of the asylum, he is empowered to receive the patient, but must send off copies of all these to the Lunacy Commissioners within twenty-four hours; and again, after two clear days, he must send them his own views of the case, drawn up as a statement.

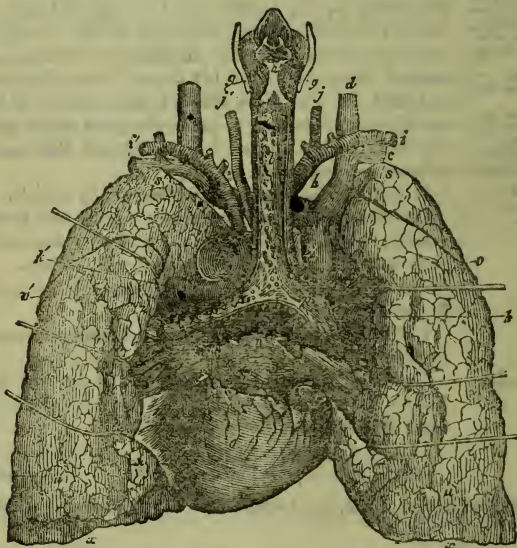
Pauper patients occupy a different category. The pauper lunatic is first to be brought before a magistrate and examined by him, with the aid of a medical man. After that he may be sent at once to an asylum on their order; but if the order be

signed by two medical men, the magistrate has no option—he must send him. The pauper, instead of being sent to an asylum directly, may be taken to the workhouse, but a certificate must be given that his is a proper case to be so dealt with. It is, however, desirable to know that patients dangerous to themselves or others may be restrained independently of the law of lunacy. Thus, by the common law, patients the subjects of delirium tremens may be so restrained. These apparently dull formalities have to be taken to ensure that no sane person shall be confined as insane.

Luncheon.—The irregularity of this meal for the business man is a serious danger. It is a well-established law in dietetics that the meals should be taken at fixed periods, and no food eaten at any other time. Nothing so weakens the power of digestion as the habit of picking up a snack here and there as chance offers. Even if it be but a bit of bread thus taken, it is not safe. The smallest morsel of food is apt to arouse the full activity of the stomach and

stomach by long abstinence that a good dinner cannot be well assimilated. It is far better to over-eat at lunch than not to eat at all.

Lungs.—As regards the structure of the lungs, the general idea to be laid hold of is that the lung is simply a *bag of air-cells*, or pockets containing air. In front of the throat we have the windpipe. This windpipe divides at the root of the neck



THE LUNGS.

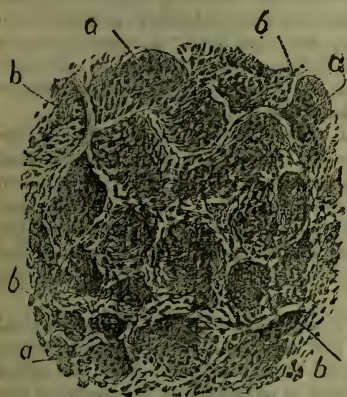
all the digestive apparatus, and these forces, which are designed for the important work of supporting life, are wasted upon what can only at best momentarily content a caprice of the palate. The luncheon, when taken regularly, is too often, with the man of business, a meal eaten so distractedly, and despatched so hastily, that it is impossible for the appetite to enjoy or the stomach to digest it. The danger of spoiling the appetite for dinner is infinitely less than the danger of so weakening the

into two branches or bronchi—a main pipe for the right lung, and another main pipe for the left lung. The lungs, as shown in the accompanying illustration, are two in number, and have the heart lying somewhat obliquely between them.

It has been well observed that those who are desirous of understanding the structure of the lungs will learn more by five minutes' examination of the lungs and windpipe of a sheep or calf than from any description. It is to be observed, however, that in these

the mode of death by bleeding gives the lungs a much paler colour than they naturally would present.

In the illustration, which shows the thoracic viscera, looked at from behind, *a* represents the arytenoideus; *b*, the trachea; *p*, the bronchi; *g*, the crico-arytenoideus posticus muscle; *k*, *k'*, the pulmonary arteries; *l*, *m*, the pulmonary veins; *f*, the arch of the aorta divided; *o*, the posterior surface of the heart; *d*, the internal jugular vein; *e*, the subclavian; *c*, the innominate vein; *h*, the brachiocephalic or innominate



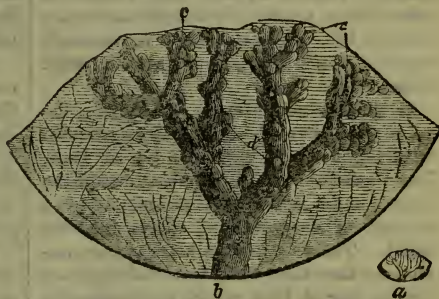
INTERIOR OF AIR-CHAMBER OF THE HUMAN LUNG.

aa covered with capillary blood-vessels. *bb* largely magnified.

artery; *j*, the right common carotid artery; *j'*, the left common carotid artery; *i*, the right subclavian artery; *i'*, the left subclavian artery; *s*, the superior lobes of the lung; *v*, the right interlobular fissure; *v'*, the left interlobular fissure; *x*, the base of the lung.

Lungs, Air-Cells of.—The size of the air-cells varies in different parts of the same lung, but each measures on an average about the 16th part of an inch in diameter. Thus, you find that the lung itself, though a large organ (the two lungs weighing about 40 ozs.), is made up of microscopic parts.

A section of the lung, showing its minute structure, is given in the above illustration: *b* is the same as is represented in *a*, only magnified about nine diameters. A small bronchial tube is seen to enter a lobule of the lung where it divides and subdivides into numerous twigs, *t*; these, as they approach the surface of the lobule, have their calibre narrowed; but while this takes place they become more numerous. They end in close, rounded extremities, *c*. These little rounded extremities are the pulmonary cells. The bronchial twigs and the pulmonary cells are distended with air; *d* indicates the commencement of other twigs into which no air has passed.



SECTION OF THE LUNGS.

Lungs, Atmosphere Poisoned by Air from.—See ATMOSPHERE POISONED BY AIR FROM LUNGS.

Lungs, Colour of the.—As to the colour of the lungs, they are, in infancy, of a rosy pink hue, but they are not of the same colour throughout life. As we grow older they change to a grey colour, and sometimes to a dark bluish grey. At one time it was believed that this change of colour was natural, but now it is thought that they change colour owing to the substances or matters which are inhaled into them from the outside world. Those who work at trades or in places where a large number of black particles float in the air, have blacker lungs than other people.

Lungs, Exercise for the.—

Exercising the voice in speaking is a useful sort of exercise, and particularly serviceable to the female sex, who are more confined at home than men. Dr. Andrew pleasantly remarks that one reason why women require less bodily exercise than men is that they are more loquacious. Loud reading and speaking are also of singular benefit to literary men, affording them a substitute for other kinds of exercise for which they will seldom give themselves sufficient leisure. It is supposed that to this cause we may justly ascribe the longevity of many schoolmasters and teachers in universities, who, notwithstanding their sedentary employment and the vitiated air they daily breathe in schoolrooms, preserve their health and attain to long life. Celsus strongly recommends reading aloud to those who have weak stomachs.

Singing is another mode of exercising the voice which, in moderation, may be attended with beneficial consequences, or, at least, may be useful to those important organs the lungs; and it is also to be recommended on account of its enlivening effects upon the mind. Those sedentary artificers or mechanics, therefore, who, from habit, almost always sing at their work, unintentionally contribute much to the preservation of their health.

When, however, disease of any kind exists in the chest, exercise of the lungs in speaking, reading, and singing, and also in ordinary muscular exertion, ought either to be entirely refrained from or strictly regulated by professional advice. When a joint is sore or inflamed, we know that motion impedes its recovery. When the eye is affected, we for a similar reason shut out the light; and when the stomach is disordered, we have respect to its condition, and become more careful about diet. The lungs demand a treatment founded on the same general principle. If they are inflamed, they must be exercised as little as possible, otherwise mischief will ensue. Hence, in a common cold of any severity, silence, which is the absence of direct pulmonary exercise, ought

to be preserved, and will in truth be its own reward.

In severe cases, and in acute inflammations of the chest, this rule is of the greatest importance. It is common to meet with patients who cannot speak three words without exciting a fit of coughing, and who, notwithstanding, cannot be persuaded that speaking retards their recovery. In like manner in spitting of blood and in the early stage of tubercular consumption, when the breathing cannot be excited without direct mischief, it is often difficult to convince the patient of the necessity of silence. He, perhaps, does not feel pain in attempting to speak, and says that "it merely raises a short tickling cough, which is nothing." But if he persists, dearly bought experience will teach him his error.

All violent exercise ought for similar reasons to be refrained from during at least the active stages of cold. Everything which hurries the breathing, whether walking fast, ascending an acclivity, or reading aloud, has the same effect upon the diseased lungs that motion of the bone has upon the inflamed joint.

It is well understood among professional men that in speaking, singing, and playing on wind instruments, the lungs are called into play as powerfully as in running or any other species of severe muscular exercise. "From not adverting to this fact," says Dr. Combe, "a strongly constituted individual who brought on spitting of blood by bodily labour to which he had not been accustomed, conceived himself perfectly safe and even cautious when he gave up the spade and confined himself to talking a great deal, which he did daily to numerous visitors, in explanation of favourite views then occupying all his thoughts. The consequence was that the prescribed treatment was without effect, and a fatal illness was brought on. When the action of the lungs was subsequently explained to this individual, he saw at once the error into which he had fallen, and lamented the ignorance which had led to it, but too late to derive any advantage from his knowledge."

Lungs, How to Test State of.—

"Those," says one writer, "desirous of ascertaining the true state of their lungs may do so by drawing in as much breath as they conveniently can; they are then to count as many as possible in a slow audible voice, without drawing in more breath. The number of seconds they continue counting must be carefully observed. When the lungs are in a sound condition, the time will range as high as from twenty to thirty-five seconds. In a consumptive the number does not exceed ten, and is often less than six seconds; in pleurisy and pneumonia it ranges from nine to four seconds. The progress and even the commencement of consumption, or of any other pulmonary disease, can be traced in this way, if the capacity of the lungs in time of health is known by the same standard."

Lungs, Lobules of.—The surface of the lung is divided into a great number of small spaces or divisions. These little divisions are called *lobules*. Each lobule is like its neighbours, so that if you gain an idea of the structure of one little division, you understand the whole. Suppose you dissect the lung, what do you find? You find that the windpipe branches out into innumerable divisions, and imitates a tree of small tubes, which grow finer and finer the farther you pass away from the main divisions of the windpipe. Trace out one of these tubes to its ultimate ramifications, and you find it end in a cluster of small cells. "Suppose," says one writer, "a main passage to have a number of little rooms clustered round one end of it in a somewhat circular form, and you get an idea of the ultimate structure of the lungs."

Lymphatic Glands (*Lat. lymphæ, a water nymph*).—The lymphatic glands appear to have no other office than that of receiving and transmitting the lymphatic vessels. They have no excretory ducts. They are very numerous throughout the system, the largest and most familiar to us

being situated in the groins, the armpits, and along the sides of the neck. In the neck they often become swollen in scrofulous affections, and form large tumours—sometimes ulcers. The glands of the armpit and groin are also liable to become diseased.

Lymphatic Vessels.—The lymphatic vessels arise from every part of the body, and contain a whitish transparent fluid denominated lymph. They form, together with the lacteal vessels, what is called the *absorbent system*. They are extremely small and delicate, and cannot readily be seen with the naked eye. They pass through what are called the lymphatic glands, and, in common with the lacteals, terminate in the thoracic duct. "They may be compared," says one writer, "to a greedy set of little animals, ready to lay hold of and carry off everything that comes in their way." They seem to have no judgment as to what is good and healthy, but will absorb poisonous and deleterious substances, as well as the most nutritious. It is well known that mercury, rubbed on the skin in the form of ointment may be absorbed, and produce salivation as effectually as if taken internally. Croton oil rubbed on the abdomen produces purging, and arsenic applied to cancers, and opium to burns, have been absorbed in quantities sufficient to poison the patients. Blood effused under the skin or nails, producing a dark appearance, is removed by these little vessels. Their office appears to be that of general usefulness, ready to take up and carry off any refuse material, dead matter, or unhealthy deposit, in any part of the system.

Macaroni (*Ital. maccheroni*, from *macca're*, to crush).—This is a highly nutritious and digestible article of diet, and, if properly cooked, may be eaten with advantage even by those of delicate digestion. It is pleasant, either well boiled till it becomes quite soft, and served with gravy from roasted meat, or plainly boiled in milk and eaten with salt or sugar. The ordinary way of eating it in this country is with grated cheese; the

macaroni being fresh boiled and laid in a pie dish, grated cheese being plentifully sprinkled over each layer. When the dish is full, some butter is put on the top of the macaroni, and the whole is finished in the oven or before the fire, to give a brown and crisp appearance to the top.

Macaroni or Vermicelli Soup.

—To a quart of beef-tea boiled down one-third, add two ounces of macaroni or an ounce of vermicelli, previously well boiled in water, and boil down the whole to one pint; add salt to taste. Instead of macaroni or vermicelli, rice may be used. It should be added to the soup after its concentration, having been previously prepared by boiling and slightly drying before the fire.

Macaroni Pudding. — To four tablespoonfuls of cinnamon water add two ounces of macaroni, and allow this to simmer till the macaroni is tender. To this add three yolks of eggs, one white of an egg, an ounce of sugar, one drop of oil of bitter almonds, and a glass of raisin wine, all beat up together in half a pint of milk, and bake in a slow oven.

Mace.—This is the membrane which surrounds the shell of the nutmeg. Its general qualities are the same as those of the nutmeg, producing an agreeable aro-



MACE.

matic odour, with a hot and acrid taste. It is of an oleaginous nature, is yellowish in its hue, and is largely used as a condiment. Mace contains about $4\frac{1}{2}$ per cent. of an aromatic oil.

Mackerel.—This is a well-known white fish of a beautiful greenish colour,

though rather dry in its quality as food. It undergoes the process of putrefaction sooner than any other fish of this description, and should therefore only be used in a very fresh state. It should be eaten pretty strongly seasoned, to promote its digestion; in fact, it is better when partially dried in the sun after having been well peppered and salted than in any other way. It is regarded as being among the most indigestible of fish, and therefore it cannot be recommended as suitable diet for invalids and persons of weak digestion. Summer is the time in which it is in the highest perfection. The finest fish are caught along the south coast of England.

Madmen, Attacks of.—A person in a house may become suddenly insane, and make a violent and deadly attack on those within reach. The best way to avert any serious calamity, in cases of such attack, is to remain calm and collected, and, if necessary, humour the madman till assistance be procured. "A lady of our acquaintance," says Chambers, "kept a boarding-house, and one day a boarder entered the room in which she was sitting, armed with a carving-knife, and with great coolness said he had taken a fancy to cut off her head. The lady was alone. She saw her extreme danger, but did not scream or appear alarmed, for that would have precipitated the catastrophe. She humoured the madman, and proposed that she should go and fetch a cloth to lay on the floor, so as to prevent the blood from damaging the carpet. This bait took, and she got safely out of the room and into her bed-chamber, in which there was a key in the door in the inside. She instantly locked the door, and, flying to the window, cried for help to the passengers in the street. The madman was speedily secured. In this instance, the lady clearly owed her life to presence of mind."

Madness, Cessation of, before Death.—The mind, after long periods of delirium or maniacal excitement, is often temporarily restored before the taper of life

dies out. This return of reason is popularly known as a "lightening before death." An interesting example is given by Sir Henry Hallford: "A young gentleman of family, about twenty-five years of age, took cold whilst under the influence of mercury. The disease increased daily, until it was accompanied at last by so much fever and delirium as made it necessary to use not only the most powerful medicines, but also personal restraint. At length, after three days of incessant exertion, during which he never slept for an instant, he ceased to rave, and was calm and collected. His perception of external objects became correct, and they no longer distressed him, and he asked pressing if it were possible that he could live. On being answered tenderly, but not in any way calculated to deceive, that it was probable he might *not*, he dictated most affectionate communications to his friends abroad, recollected some claims upon his purse, 'set his house in order,' and died the following night." This appearance of a favourable change, Sir Henry Hallford ingeniously ascribes to the failure of strength, and the consequent mitigated influences of the action of the heart upon the brain.

Madness, Influence of Moon on.—Harrison tells us that it is a common idea that lunatics are influenced by the moon; indeed, the name *lunatics* was no doubt given to insane people from the supposed power of the moon in producing madness. There does not seem to be any real ground for this belief, although it is acknowledged that insane people are usually more than ordinarily restless at the full of the moon. The well-known French writer Esquirol attributes this to the effect of the increased light, and states that the dawn of day occasions a similar agitation. "Light," he asserts, "frightens some lunatics, pleases others, but agitates all."

Madness, Symptoms of.—These are to be found in an altered and peculiar appearance of the eyes, protruding and

wild; rapid and successive change of features; unusual vigour, and uncommon agitation of the whole muscular powers; insusceptibility to extremes of heat and cold, and to the influence of contagious diseases; insensibility of the skin, stomach, and bowels, and hence obstinate costiveness; absence of sleep; high, bounding spirits; erroneous imagination; incessant talking, singing, shouting, etc.; obscene language and gestures; sometimes excruciating pain, denoted by frequent changes of posture, beating the forehead, breasts, stomach, sides, or belly; eructations of wind from the stomach of a very peculiar foetor; high-coloured urine; delirium. The skin is dry, harsh, and cold, sometimes with partial cold and clammy perspirations; breath hot and offensive; hurried respiration.

The most common period of attack is between the ages of eighteen and forty.

Dr. Forbes Winslow, in his "Obscure Diseases of the Brain and Mind," a work which may well be read for entertainment, not to speak of its valuable instruction, points out that "disorder of the functions of the brain, in the early period of its manifestation, may be of so slight and transient a character as to be easily overlooked by the patient, as well as by his physician. An apparently unimportant knitting of the brows, a trifling sensation of numbness in some part of the body, a condition of general or local muscular weakness, a state of *ennui*, mental peevishness, irritability, and physical restlessness, an almost unappreciable depression or exaltation of the animal spirits, an impairment and disorder of the sense of sight, loss, aberration, or confusion of memory, defect in, or acute manifestation of, the sense of hearing, an inaptitude for mental work, an inability to concentrate the attention continuously on any subject, a state of sleeplessness, or condition of lethargy, a trivial deviation from the usual mode of talking, such as suddenly pausing in the conversation, as if to regain a lost train of ideas, a slight defect in the articulation, associated with a transposition of words, and inability to pronounce certain

letters, are all characteristic symptoms, frequently diagnostic of disease having commenced in the brain, and yet may be disregarded."

Madness very frequently terminates in the opposite form, or melancholy. Chronic incurable derangement, or fatuity, embraces a large proportion of its subjects. The distinction between this form of insanity and melancholy may be readily perceived by comparing the symptoms of the one with those of the other.

Coleridge points out that "madness is not simply a bodily disease. It is the sleep of the spirit, with certain conditions of wakefulness; that is to say, lucid intervals. During this sleep, or recession of the spirit, the lower, or bestial states of life rise up into action and prominence. It is an awful thing to be eternally tempted by the perverted senses."

Madness, Treatment of.—One of the first things to be done in all cases of insanity, under whatever form it may appear, is to separate the patients from their friends and home, as this separation is invariably conducive to recovery. The judicious exercise of the faculties conduce much to recovery. This must be done by exciting the patients' attention—by presenting new objects to their contemplation—by giving way, in some measure, to their hallucination. If, by these means, their confidence can be gained, the probability of cure is much increased. The passions, also, must be carefully managed. The proud and rebellious passions and emotions must be tamed and kept in subjection; while the timid and melancholy are to be dissipated by encouragement. It is sometimes proper to substitute a real for an imaginary grievance. Thus, a melancholic is devoured with *ennui* in the midst of the pleasures and enjoyments of life. If we withdraw him from his usual habits, and impose upon him real privations, he will then suffer real *ennui*, which will prove a powerful means of cure. Travelling is often very useful, and so is active corporeal exercise.

The clothing should be warm and comfortable, and the food prevented from being devoured with voracity. In the majority of cases, a plain and regular course of living is essential. Patients accustomed to wine ought not to be wholly debarred from it. When the symptoms of indigestion exist, a suitable diet must be enforced. When exhaustion is apprehended, from a too long continuance of high excitement, the most nutritious food should be given.

A principal object in the medical treatment is to procure for the patient sound and refreshing sleep, and the endeavours should be directed towards insuring it for many nights successively.

Magnesia.—See MEDICINES, HOME.

Maize.—Maize is poorer than wheat in flesh-formers, but richer than rice. It contains more fat than wheat, barley, or rice. Mixed with wheaten flour, it yields an agree-



MAIZE.

able bread. It may be used for biscuits, puddings, porridge, cakes, etc.

Next to wheat and rice, maize is the grain most used in the nourishment of man. In

Asia, Africa, and America it is the principal daily food of a large portion of the population, especially of the colonists. In some of the provinces of France, too, it is consumed in large quantities. There are eight varieties of the maize; the most productive is the maize of Cusco. The flour of maize is yellow, and it contains an oily matter, which, when fresh, gives it an agreeable flavour and odour; but the action of the air on it soon develops rancidity. If carried any distance, it should be stored away in airtight vessels. An excellent soup is prepared with meat and maize-flour. The inhabitants of some countries, where wheat is scarce, make, with maize and water, or milk, and salt, a kind of biscuit, which is pleasant in taste, but indigestible. Some of the preparations of maize-flour are very good, and, when partaken of in moderation, suitable food for almost everybody.

Maize, Preparations of.—Many preparations of maize are now popular articles of food, under the names of corn-flour, Oswego, maizena, etc. "It must be distinctly understood," says Professor Church, "that these products are not flour, but merely pure starch, and that they contain mere traces of bone-forming and flesh-forming materials. When used with milk, however, their deficiencies are to some extent supplied, although, even then, there must necessarily be an excessive proportion of heat-giving to flesh-forming nutrients in the mixture. In 1 lb. of the so-called 'corn-flour' from maize we found but 18 grains of flesh-formers; in 1 lb. of the similar preparation known as 'Oswego' 69 grains were present."

Malic Acid.—Malic acid is met with in many fruits, more particularly in fruits of the order *Rosaceæ*. It may be obtained from apples and pears.

Malingering.—See FEIGNED DISEASES.

Mal-nutrition (*Lat.* malus, bad; nutritio, I nourish).—Mal-nutrition is said to

take place when the body is badly nourished, and supplied with impure air and food. It is a frequent cause of mortality amongst young children, and especially amongst those who are farmed out; but it is to be hoped that recent legislation on the subject may bring about improvement in this respect. The unhealthy state of the children in our large towns is largely due to this cause, and may be seen in the stunted and rickety condition which they present. The evils thus taking place in early life influence the future development of the individual, and are more likely to render him susceptible to some forms of disease than those who are more healthy. For the prevention of such mischief the diet should be carefully regulated, and our sanitary officials should see that there is a plentiful supply of good water and air. In this respect it is very important that all adulteration of milk, bread, and other necessaries of life should be severely punished; that the water supply should be abundant and wholesome, and that in every large town open spaces and parks should exist for the children to play about in. As intelligence and education advance, it is probable that cases of mal-nutrition through ignorance will lessen; when arising from wilful neglect, the guilty parties are liable to the law; when from poverty or misfortune, the poor-law relief steps in so as to prevent people from suffering at any rate from starvation.

Mammary Gland.—See BREAST.

Man, Erectness of.—See SKELETON, ERECTNESS OF.

Man, Growth of.—See GROWTH OF MAN.

Management of Fever.—See FEVER, GENERAL MANAGEMENT OF.

Management of Infants, General Rules for.—1. Bathe the child once a day in tepid water. If it is feeble, sponge it all over twice a day with tepid

water, or with tepid water and vinegar. The health of a child depends much upon its cleanliness.

2. Avoid all tight bandaging. Make the clothing light and cool, and so loose that the child may have free play for its limbs. At night undress it, sponge it, and put on a slip. In the morning remove the slip, bathe the child, and dress it in clean clothes. If this cannot be afforded, thoroughly air the day-clothing by hanging it up during the night. Use clean diapers, and change them often. Never dry a soiled one in the nursery or in the sitting-room, and never use one for a second time without first washing it.

3. The child should sleep by itself in a cot or cradle. It should be put to bed at regular hours, and be early taught to go to sleep without being nursed in the arms. Without the advice of a physician, never give it any spirits, cordials, carminatives, soothing syrups, or sleeping-drops. Thousands of children die every year from the use of these poisons. If the child frets and does not sleep, it is either hungry or else ill. If ill, it needs a physician. Never quiet it by candy or by cake; they are the common causes of diarrhoea and of other troubles.

4. Give the child plenty of fresh air. In the cool of the morning and evening send it out to the shady sides of broad streets, to the public squares, or to the park. Keep it out of the room in which washing or cooking is going on.

5. Keep the house sweet and clean, cool and well aired. In very hot weather let the windows be open day and night. Do your cooking in the yard, in a shed, in the garret, or in an upper room. Whitewash the walls every spring, and see that the cellar is clear of all rubbish. Let no slops collect to poison the air. Correct all foul smells by pouring carbolic acid, chloride of lime, or a strong solution of copperas into sinks and privies. The gutters of street or court should be kept scrupulously clean.

6. *Breast-milk is the only proper food for infants.*—If the supply is ample, and the child thrives on it, no other kind of food

should be given while the hot weather lasts. If the mother has not enough, she must not wean the child, but give it, beside the breast, goat's or cow's milk, as prepared under Rule 8. Nurse the child once in two or three hours during the day, and as seldom as possible during the night. Always remove the child from the breast as soon as it has fallen asleep. Avoid giving the breast when you are over-fatigued or over-heated.

7. If, unfortunately, the child must be brought up by hand, it should be fed on a milk diet alone—that is, warm milk out of a nursing bottle, as directed under Rule 8. Goat's milk is the best, and next to it, cow's milk. If the child thrives on it, no other kind of food whatever should be given it while the hot weather lasts. At all seasons of the year, but especially in summer, there is no safe substitute for milk if the infant has not cut its front teeth. Sago, arrow-root, potatoes, corn-flour, crackers, bread, every patented food, and every article of diet containing starch, cannot and must not be depended upon as food for very young infants. Creeping or walking children must not be allowed to pick up unwholesome food.

8. If the milk is known to be pure, it should have one-third part of hot water added to it until the child is three months old; after this age the proportion of water should be gradually lessened. Each half-pint of this food should be sweetened either with a dessertspoonful of sugar of milk, or with a teaspoonful of crushed sugar. When the heat of the weather is great, the milk may be given quite cold. Be sure that the milk is unskimmed; have it as fresh as possible, and brought very early in the morning. Before using the pans into which it is to be poured, always scald them with boiling suds. In very hot weather, boil the milk as soon as it comes, and at once put away the vessels holding it in the coolest place in the house—upon ice, if it can be afforded, or down a well. Milk carelessly allowed to stand in a warm room soon spoils, and becomes unfit for food.

9. If the milk should disagree, a table-spoonful of lime-water may be added to

each bottleful. Whenever pure milk cannot be got, try the condensed milk, which often answers admirably. It is sold by all the leading druggists and grocers, and may be prepared by adding to ten teaspoonfuls of boiling water, without sugar, one table-spoonful or more of the milk, according to the age of the child. Should this disagree, a teaspoonful of arrowroot, of sago, or of corn-flour may be cautiously added to a pint of the milk, as prepared under Rule 8. If milk, in any shape, cannot be digested, try, for a few days, pure cream diluted with three-fourths or four-fifths of water—returning to the milk as soon as possible.

10. The nursing-bottle must be kept perfectly clean; otherwise the milk will turn sour, and the child will be made ill. After each meal, it should be emptied, rinsed out, taken apart, and the nipple and bottle placed in clean water, or in water to which a little soda has been added. It is a good plan to have two nursing-bottles, and to use them by turns. The best kind is the plain bottle with a rubber nipple and no tube.

11. Do not wean the child just before or during the hot weather; nor, as a rule, until after its second summer. If suckling disagrees with the mother, she must not wean the child, but feed it, in part, out of a nursing-bottle, or on such food as has been directed. However small the supply of breast-milk, provided that it agrees with the child, the mother should carefully keep it up against sickness; it alone will often save the life of a child when everything else fails. When the child is over six months old, the mother may give it one or two meals a day of stale bread and milk, which should be pressed through a sieve and put into a nursing-bottle. When from eight months to a year old, it may have also one meal a day of the yolk of a fresh and rare boiled egg, or one of beef or mutton broth, into which stale bread has been crumbed. When older than this, it can have a little meat, finely minced; but even then milk should be its principal food, and not such food as grown-up people eat.

Mandible.—See JAWS.

Mango.—The mango is the fruit of an East Indian tree, which somewhat resembles the almond in its kernel. It is considered to possess an invigorating odour in cases of declining health. From its expressed juice is prepared a wine, and the remainder of the kernel can be reduced to an excellent flour for the making of bread. A delicious pickle is made of the mango.

Man's Skull Compared with Monkey's.—See SKULL, COMPARISON OF MAN'S AND MONKEY'S.

Many-tailed Bandage.—This is a long strip crossed by short ones, fastened at right angles. It is useful as applied to a limb, because, without moving the limb in the least, it can be undone and the injury examined.

Maple.—The sugar maple-tree is the species that deserves attention. From this species the American sugar is produced in the form of molasses, which may likewise be converted into both a vinegar and beer. Its proportion of saccharine juice is said to be much connected with the preceding fall of snow in the winter.

March of English Generation through Life.—A picture, vivid by its lively representation, of the various illnesses and accidents which befall the average inhabitant of our island, is given by Dr. Farr in the Thirty-fifth Annual Report of the Registrar-General of Births, Deaths, and Marriages.

This account of the march of an English generation through life commences by singling out, in imagination, a million children from the moment of birth. Of these, some are born feeble, some are early attacked by disease; their frail and immature forms are surrounded by many perils. It will be found that more than a fourth part of the whole number, taking England all over, will have been removed by death

before they reach the age of five years. Most of the survivors have been attacked by some disease, or by more diseases than one. Yet increasing strength enables them to withstand better the onslaughts of illness, and less than a seventh part of the number of deaths recorded in the first period of five years is enumerated in the second five.

The deaths between the ages of ten and fifteen are fewer than at any time of life. It is as if the destroying angel looked compassionately for a few moments on the weakened numbers of that mighty host from which he had already exacted so heavy a tribute.

At the age of fifteen to twenty the mortality increases again, especially among women; as consumption and childbirth—for a greater proportional number of deaths occur among those who marry at an early age—make severe havoc in their ranks. At this age the more dangerous occupations of men, over those of women, begin to show their influence, and fully eight times as many men as women die violent deaths. The number of deaths from violent causes increases in the next five years—from twenty to twenty-five—while, during it, nearly half the mortality is from consumption.

From this point onwards the progress of the career of the remainder is only chronicled by the Registrar at intervals of ten years. In the period from twenty-five to thirty-five consumption is again the most fatal disease; most of those who die are already settled into their several avocations, and are fathers and husbands, mothers and wives. Hence the deaths which occur leave more sorrow and trouble behind them than those at an earlier age.

Between thirty-five and forty-five the same conditions continue in the main. The new generation, which is in time to succeed the one whose fate has been the object of inquiry, has now been born. We must not, however, pause to contemplate their career, but must fix our attention on the further progress of the rapidly thinning ranks, whose onward march we have been mentally ac-

companying. The deaths by consumption still predominate; but the strain of time on the structure of the body has also been great at this age, and many succumb to diseases of the principal organs. The violent deaths at this age continue at much the same quota as at the period when men first begin to enter active life.

The period from forty-five to fifty-five begins with diminished numbers: the million which was surveyed in imagination at the outset has now dwindled down to half that number. The number of deaths at this age is considerably greater than in the preceding decade. Consumption is still very destructive, and diseases of the brain and diseases of the heart show, by the number of their victims, the effect of the combined strain of wear and tear.

“To the age of fifty-five,” of the million singled out in imagination by Dr. Farr, from whose remarks the foregoing have been condensed, “near the middle of the possible lifetime of mankind in its present state, 421,115 attain, and from this point of time it is possible to look ahead, and discover the particular rocks, foes, collisions, tempests, to be encountered, to be dreaded, or to be weathered by the fleet, on its way to the utmost butt of existence and very sea-mark of its journey’s end.”

One thing to remark is that the rate, the degree of danger, which has hitherto increased slowly, now increases at so much faster a pace that, although the number of lives grows less, the number of deaths increases in every one of the next twenty years, and is afterwards sustained for ten years longer, until at last, in the distance, all sink into the elements from which they came.

Of any hundred women living at the age of fifty-five and upwards, it is worthy of note that eleven are spinsters, forty-three widows, and forty-six wives; of a hundred men, nine are bachelors, twenty-four widowers, and sixty-seven husbands.

To continue the chronicle. At the age of fifty-three the number of men and women surviving become equal; but from fifty-five

and onward the women exceed the men in number. Between fifty-five and sixty-five the diseases of the lungs, heart, and brain are very fatal to life. Among the men violent deaths are as common as at the earlier stages; but it is a sad thing to contemplate that suicides are more numerous, the greater number of deaths from that cause, in proportion, occurring at this age. That the cares and troubles of life increase, while life and vigour decline, probably accounts for this melancholy fact.

Between sixty-five and seventy-five the deaths are more numerous than in the ten years previous. By this time the majority of the grandchildren of the generation under consideration have been born, sixty-seven being about the average age of grandpaterinity. A second great landmark in the life of the generation is thus passed.

The age of seventy-two is that when the greater number of men die. From seventy-five to eighty-five the influence of weather upon health becomes more marked.

One would hardly expect to find that, on an average, out of every million born, 161,124 reach the age of seventy-five. But by eighty-five this number has dwindled to 38,565, of whom Dr. Farr calculates that only about 220 reach the age of a hundred.

"Interesting as this chronicle is," says the writer in the *Quarterly Review*, to whom we are indebted for the above paragraphs, "recalling as it does to the mind the beautiful story of the 'Vision of Mirza,' it is impossible to read it, any more than it is possible to read that charming allegory, without a feeling of melancholy. One cannot help reflecting on the regrets which must accompany each departure from life—the hopes unaccomplished, the vigour prematurely cut short, the families dispersed, the histories of pain and sorrow condensed into one brief line of the general statement. One cannot help thinking of the continuous and constantly recurring labours of the father of the family, the life-long exertions, the struggles to make or maintain his position; of the labours, less seen, but none the less arduous, of the mother, holding the

household together with the bond of affection which makes the 'house' the 'home.'"

Marjoram.—Although there are several species of marjoram, that which is known as the sweet or knotted marjoram is the one usually preferred in cookery. It is a native of Portugal, and when its leaves are used as seasoning, they have an agreeable aromatic flavour. The winter sweet marjoram used for the same purpose is a native of Greece, and the pot marjoram is another variety brought from Sicily.

Marrow.—Marrow is a fatty secretion of the membranes of bones. It is more penetrating than any other animal fat, and therefore highly proper for external application in a medical view. As constituting a nourishing part of animal food, it is liable to all the objections that may be made to oily substances when received into the stomach. Notwithstanding this, when spread on toast and eaten hot, it forms an agreeable and palatable substitute for butter. Pepper and salt should be eaten with it.

Marrow, Vegetable.—The fruit of the vegetable marrow is very watery, but it contains more nutritive matter than its close ally, the cucumber. When fit for cooking, starch as well as sugar is found in the vegetable marrow. The young vegetable marrow, when peeled and properly cooked, forms a wholesome and pleasant food, of delicate flavour and agreeable consistence. It may be used with apples or any kind of fruit in making fruit-pies, and its presence is difficult of detection, as it so readily receives the flavour of the fruit with which it is used.

Marshes, Water from.—See MILL-DAMS, WATER FROM.

Mashed Carrots and Turnips.—Having peeled the carrots and turnips, boil them separately in three successive waters, and having pressed the water out of them through a clear coarse cloth, mash them together with a sufficient quantity of

milk to make them into a pulp, and season with salt. Place them before the fire till the surface seems dry. This will prove an agreeable dish in convalescence from severe diseases when the diet is restricted to farinaceous food and vegetables. There is nothing to prevent the use of most kinds of vegetables during convalescence, provided they are properly boiled.

Mastication (*Lat.* *masticatus*, chewed; from *mastico*, I chew).—The movements of the masticatory apparatus of the human being are more complex and more varied than those of any other animal, resembling those of both the flesh-eating and grazing species, showing, as does also the comparative anatomy of the teeth, that the human race is adapted to live on a mixed diet. The process of mastication, which is one of very great importance, consists in dividing and comminuting the food by the teeth, reducing it to a state of complete disintegration, which is a necessary condition for its insalivation—the mixture of the food with the fluids of the mouth—and subsequently for the action of the digestive fluids of the intestinal canal.

Mastication of Food.—There is a great deal of popular misconception with regard to the amount of chewing required by flesh-food. Persons with bad, false, or tender teeth often imagine that a vegetable diet is more suited to their imperfect powers of mastication than an animal one, and we often see mothers instructing their children carefully to chew meat, and neglecting the same precaution in respect of vegetables. Physiology teaches an opposite caution. It is desirable, indeed, that the jaws should break up muscular fibre, lest it should perchance stick in the gullet, and be certainly difficult of penetration by the gastric juice of the stomach; but to a vegetable aliment the performance is owing of more important functions. It is still more indispensable that it should be broken up, for it has to be immediately acted upon; and it is indispensable, also, that it should be detained

in the mouth till enough saliva to convert its starch into glucose has been secreted. Complete mastication, therefore, important for both, is still more important for vegetable than for animal food; and the leisurely performance of the operation cannot be prudently omitted by a mixed eater. We may also reflect that while lions and tigers and wild dogs bolt their food, cows not only spend the greater part of the day over their nibbled meals, but give them a second chewing when in repose.

Match-Makers, Diseases Incidental to.—One of the most terrible of diseases is produced by inhaling the fumes of phosphorus in the process of making matches, namely, a necrosis, or death, of portions of the upper and lower jaw-bones. A surgical operation is required for the removal of such dead bone. It is, fortunately, often successful, at least as to life; but an infinitely better method is the preventive one.

In addition to this, the fumes of phosphorus produce catarrh of the lungs and stomach in almost all the workmen; they lose appetite, and become pale, weak, and thin. There are several precautions which should be observed, but the chief one is the substitution of a kind of phosphorus—the amorphous—which is not poisonous when swallowed, and does not give off vapours, as common phosphorus does, at the ordinary temperature of the air.

Maté or Paraguay Tea.—In Paraguay, North Corrientes, Chaco, and Southern Brazil, the leaves of a small tree are employed in precisely the same way that tea is used in China, Japan, and India. The infusion of these leaves contains tannin, an aromatic oil, and some theine. "Indeed," remarks Professor Church, "it is a singular and most instructive fact that the chief characteristic constituent of tea, coffee, maté, guarana bread, and the African kola nuts, is identical—the alkaloid theine or caffeine. Even cocoa contains a very nearly related substance—theobromine. Naturally,

all these plants have come into general use amongst the inhabitants of the countries where they flourish; and now it is ascertained that their chief physiological properties depend upon the presence of a substance which is identical in five of them and closely allied in the sixth." The professor proceeds to say that "maté does not yield a wholesome beverage fit for habitual use. It acts upon the nervous system mainly, but it affects the digestive tract also, and often injuriously. The habitual use of hot, strong infusions of maté is very prejudicial to the general health, although the occasional employment of this food adjunct after great fatigue is refreshing and restorative. But confirmed maté-drinkers, like opium-eaters, prefer to give up their food rather than their daily allowance of maté.

"Maté is prepared for drinking by pouring boiling water upon a teaspoonful of the powdered leaves in a cup or calabash, adding a little sugar, and sucking up the infusion through a small tube or "bombilla."

Material Necessary for Warmth.—See WARMTH, MATERIAL NECESSARY FOR.

Materials for Filters.—See FILTERS, MATERIALS FOR.

Materials of House.—When building or buying a house, the materials of the house itself well merit the most careful consideration. Every one may not be able to tell the difference between good brick and bad brick, but there are people who can; and it is better to pay for such skill than to have one's house constructed of bad material. In districts where stone is used, this, too, requires to be selected. Of the wood used, little need be said beyond pointing out the necessity to provide for future comfort by having nothing but seasoned timber; otherwise imperfectly fitting doors and window-sashes will try tempers and give rise to draughts.

Buildings for working men should be
M. D.

erected of sound materials—brick or stone—not mud, and, for several reasons, not of timber, though timber houses may, in some districts, be the cheapest; but there is the risk of fire, and they are subject to vermin.

Maxilla, Inferior.—See JAWS.

Maxilla, Superior.—See JAWS.

Mead.—Wine has been made in the northern countries, not only from fruits, but from another substance, in consequence of the quantity of sugar it contains—namely, honey. This liquor is termed mead, and it holds a middle place between malt liquors and the sweet wines. Mead is made by boiling honey and water with aromatics, as cinnamon, ginger, nutmeg and cloves, and afterwards subjecting it to fermentation, like other wines, by the addition of yeast. When kept to a proper age, it becomes clear, firm, and of a pleasant vinous taste. It is considered as particularly useful in nervous cases, being a powerful cordial and approaching in its nature to the wines of Spain and Portugal; though it differs from them in possessing, along with its stimulant, a nourishing quality. It forms, therefore, the most proper drink for the aged and infirm, and is also most suited to the winter season. In many constitutions, however, honey is a peculiar substance, and disagrees, occasioning uneasiness of the stomach and bowel complaints; whenever this is the case, mead forms an improper beverage. Even when it agrees, it should never be drunk till it is fine, as it contains more viscid parts than any other wine, which should be fully deposited before it is tasted.

Mead was a favourite and ancient drink in Ireland. It is mentioned in the seventh century, and was called by the Irish *míodh* and *míl-fíon*, that is, honey-wine. It is mentioned in the "Life of St. Berach," who flourished in the seventh century, and in the "Annals of Ulster," under the year 1107.

Meals in Sick Room.—With reference to the proper manner of serving meals

in a sick room—"Serve them," says an American authority, "upon a tray covered with a fresh napkin. Have cups and spoons shiningly clean. Be careful not to slop the tea into the saucer, and not to bring *too much* of anything. Be careful that all necessary things are on the tray when it is brought to the patient; if you are obliged to leave it a moment to go for something else, never set it on the bed, but on the table. Never taste a patient's food in his presence. Take the tray out of the room as soon as the meal is eaten. You may keep beef-tea which is needed for the next dose in the nearest cool place, carefully covered. The ledge outside the window, in the shade, will answer if there is no better place. Take it away from the bed, even if you have to give it again in ten minutes. Medicines, food, or stimulants, should never be where the patient can see or smell them. Never leave food standing on the table under the idea that perhaps the patient will 'take a little by-and-by.' When needed, let it be brought promptly, hot (unless there is diarrhœa), in the right quantity, and without too much stir or parade, or rattling or jingling of cups and spoons."

Meals, Three, a Day.—See THREE MEALS A DAY.

Measles.—This is a disease of a highly infectious character, but constitutions which have once been under its influence are not as a rule liable to second attacks. It is, in general, a disease of childhood, but no age is exempt from it.

Measles, Symptoms of.—The period of incubation—in other words, the time that elapses between exposure to the infection and the first appearance of the febrile symptoms which precede the eruption—is, in most cases, about a fortnight. Then comes a slight chilliness, followed by fever, with sneezing and watery eyes, and then cough, and perhaps a sensation of roughness and slight soreness of the throat. As all these, however, are also the symptoms

of a severe cold, we can at the commencement be led to suspect measles only by the known presence of the specific contagion, and the known liability of the patient to receive it. But the fever is more permanent than in an ordinary cold, and increases in intensity, except in very mild cases, and on the third or fourth day—though sometimes not till the fifth—an eruption appears in patches. It is two or three days in coming out, beginning on the face and neck, and gradually working its way downwards. This rash fades in the order in which it occurs, the red colour giving way to a somewhat yellowish tint, and the cuticle crumbling away in a fine bran-like powder—a process often attended with considerable itching. By the eighth or ninth day of the disease the eruption on the face has nearly disappeared, although traces of it often remain for four or five days longer.

In its early stage measles run the risk of being mistaken for small-pox. There are two important points in which it differs. First, the fever does not cease or even abate when the eruption makes its appearance, but sometimes increases in intensity. Secondly, the disease is not more severe or more dangerous because the eruption is plentiful or early. The character of the eruption, after the first day, will serve to remove all doubt regarding these two diseases; and the prevalence of either measles or small-pox in the neighbourhood will be of material service in arriving at a conclusion.

Measles is distinguished from scarlet fever or scarlatina by such peculiarities as to render it difficult, even for a tyro, to mistake the one for the other. First, measles at the outset exhibit catarrhal symptoms which do not occur in scarlet fever, at any rate, previous to the eruption. Second, there is an absence in measles of the throat affection, which always accompanies well-marked cases of scarlet fever. Third, the character of the rash in both diseases is different; in measles it presents somewhat the tint of the raspberry, in scarlet fever, that of a boiled lobster; in measles it appears in concentric patches, whilst in scarlet fever it is univer-

sally diffused; in measles it usually appears on the fourth day, and in scarlet fever on the second day of the disease. It is a curious fact that measles and scarlet fever were not properly distinguished from each other till about the commencement of the last century, a circumstance which has led some to suppose that scarlet fever is entirely a disease of modern times.

The eruption in measles is a sort of critical deposition on the surface, by which the animal economy endeavours to relieve itself from some internal morbid irritation. In general, there is a considerable tendency to inflammation throughout the whole course of the disease, the parts most subject to it being those most apt to be inflamed in common cold—namely, the eyes, nose, throat, and lungs. The inflammation of the first three is ordinarily of little consequence; it seldom becomes very troublesome, and declines with the other symptoms. The inflammation of the lungs may come on at any stage, but is most frequent after the eruption has subsided.

Measles, Treatment of.—In very mild cases, all that is required is to keep the patient on a low diet, attend to the state of the bowels, and protect him from cold, which is best done by keeping him in bed in the ordinary warmth to which he has been used in health. The idea is generally prevalent that those suffering from measles cannot be kept too hot, and much mischief is often caused in this way. One should avoid cold, it is true, but free ventilation, combined with a moderate temperature, is always best. A moist skin on the appearance of the eruption; early and free expectoration; moderate looseness, and mild fever, are to be regarded as favourable symptoms. It is a great point, in mild cases, not to do much, but to leave the principal part of the work to the natural efforts of the system, “aided,” says a physician of repute, “by the ordinary doses of sesqui-carbonate of ammonia every four hours. It should always be given, even in the mildest cases. Give three grains in

water, every four hours, to a child of eight years old. The best medicine in measles is sesqui-carbonate of ammonia, and under its use I question if we ever see great difficulty of breathing supervene, or any other symptoms of inflammation of the lungs.” Animal food and fermented liquors should be avoided. All the drink should be tepid.

In severer cases, the patient should drink freely of diluents, and especially of demulcent drinks, barley-water for example; the diet should be composed of milk and farinaceous matters; cooling fruits, and such like, may be allowed. The bowels should be attended to, but not purged. In the event of the eruption being tardy of making its appearance, or coming out small or insufficiently, or, after having come out, suddenly disappearing before the time of its regular decline, danger is to be feared. The patient must be placed in a warm bath—temperature 98°—and kept there from ten to twenty minutes, according to age. Besides this—to follow one method of treatment—to a child of five years old, half a drachm or half a tea-spoonful of spirit of mildererus should be given in a little sweetened water, every two or three hours, and warm drinks freely administered at the same time.

“A very pernicious practice,” remarks Dr. Spencer Thomson, in his valuable Dictionary of Domestic Medicine, “prevails, especially in the country, among the poor, of giving children stimulants ‘to bring out the eruption,’ and also in the course of the disease; in Scotland, whisky is given, in England, cowslip wine is the most generally employed stimulant. It is perhaps scarcely necessary to add, that none but the most ignorant and prejudiced could be guilty of so dangerous a practice. In England there seems to be a popular prejudice in favour of the virtues of the cowslip in measles, and when the wine is not used, it is very common to find the infusion, or tea of the ‘cowslip pips,’ or ‘flowers,’ given; this, of course, is perfectly innocent, and may be permitted.”

Should the feverish symptoms be con-

siderable, from four to six grains of ipecacuanha powder and half a drachm of carbonate of potash, may be made into a mixture with three ounces of water, and a dessert-spoonful of this given to a child of five years of age every four or five hours; in milder cases, ten to fifteen drops of ipecacuanha wine are to be given in the same way. For the relief of the cough opium should never be given. It seldom gives the required relief, and is certain always to increase the feverish symptoms.

Occasionally the progress of the disease is irregular, and the symptoms malignant, the fever terminating early in typhus. "In such instances," says Dr. Graham, "the best medicines are ammonia and wine. If the oppression of the chest be considerable, blisters should be applied. The tartar emetic ointment, rubbed on the chest, may be sometimes still more beneficial, or a mustard poultice, quickened with oil of turpentine, and applied to the chest, may prove of the greater service when there are symptoms denoting inflammation within the chest, and the debility at the same time is too great to admit of bleeding."

Measles, Chief Danger in.—

The chief danger, in ordinary measles, arises from the affection of the chest, especially in the case of very young children. Many of these are carried off in this way, especially if the epidemic should occur during the cold winds of spring, and if the children, as too often happens among the poor, are insufficiently attended to. When measles invade a community in its malignant or putrid form, it proves a fearfully fatal malady, cutting off numbers of children, and that in the face of the most skilful treatment. In persons of advanced years, measles may take a severe and even dangerous form by its power of arousing and developing into full and fatal action germs of disease which may have been slumbering in the system for years.

Measles, Convalescence in.—

The principal care during convalescence is

to avoid exposure to cold, as the disease leaves a susceptibility to inflammatory chest complaints for some time. In those of weak constitution many unpleasant effects may follow measles, such as severe inflammation of the eyes, swelling of the glands, consumption of the bowels, pain in the ears, deafness.

The following valuable and interesting observations of Dr. Armstrong are deserving of notice: "It is a remarkable fact," he says, "that when any cutaneous affections arise after measles, the internal organs generally remain free from disease; and even when some internal disorder has existed, I have not unfrequently seen it disappear on the occurrence of some spontaneous eruption of the skin. Indeed, there are many cases of this nature already on record. At all times we should therefore be most wary in meddling with vesicles, pustules, boils and the like, when they come out after the measles; for although they may be temporary blemishes on the surface, they are often the occasion of saving the vital walls within."

Measures, Weights and.—*See* MEDICINES, WHAT TO BE CAREFUL ABOUT IN GIVING.

Meat, Corned.—*See* CORNED MEAT.

Meat, Extract of.—*See* EXTRACT OF MEAT.

Meat, Hanging.—*See* HANGING MEAT.

Meat, How to Choose.—There are some signs by which the good quality of butchers' meat may be generally judged. Amongst these, in the case of mutton and beef, we may name a rich, bright, and uniform colour, and a firmness of texture, quite free from flabbiness, though moderately soft and elastic. Damp and clammy meat, with a tendency to exude moisture, is generally unwholesome. Very young meat, from animals forced to a very large size in a very short time, is neither agreeable in taste, nor easily digested. The rapid

rearing and fattening of animals, though profitable to the farmer, produces a poor and inferior quality of meat. The flesh, or true muscular fibre, is not properly developed, while the connective and other gelatinous tissues are present in superabundant proportion.

Meat, Parasites in.—See PARASITES IN MEAT.

Meat, Salted.—See SALTED MEAT.

Median Fissure.—See NERVES.

Medical Fees (*Lat.* medicalis, pertaining to a physician; from medicus, a physician; from medico, I heal).—In an article on “Medical Fees,” in Whitaker’s Almanack, we are informed that the following are the charges usually made by general practitioners:—

	RENTALS.		
	£10 to £25.	£25 to £50.	£50 to £100.
Ordinary Visit	2s. 6d. to 3s. 6d.	3s. 6d. to 5s.	5s. to 7s. 6d.
Night Visit	Double an ordinary visit.		
Mileage beyond two miles from home	1s. 6d.	2s.	2s. 6d.
Detention per hour	2s. 6d. to 3s. 6d.	3s. 6d. to 5s.	5s. to 7s. 6d.
Letters of Advice	Same charge as for an ordinary visit.		
Attendance on servants	2s. 6d.	2s. 6d. to 3s. 6d.	3s. 6d. to 5s.
Midwifery	21s.	21s. to 30s.	42s. to 105s.
CONSULTANTS.			
Advice or visits alone	21s.	21s.	21s.
Advice or visit with another Practitioner.	21s.	21s. to 42s.	21s. to 42s.
Mileage beyond two miles from home	10s. 6d.	10s. 6d.	10s. 6d.

“Special visits,” in other words, visits of which due notice has not been given before the practitioner starts on his daily round, are charged at the rate of a visit and a half. Patients visiting the doctor are, in many cases, though not invariably, charged at the same rate as if visited by him.

On the ordinary medical attendant being called to meet another in consultation, he is entitled to charge twice his usual fee. When he himself is called in consultation, he is entitled to the minimum fee of a guinea.

“When more members of one family,” says the writer from whom we have just quoted, “are ill at the same time, half a fee is charged for each beyond the first.”

“In midwifery cases, the fee generally covers all charges for visits, etc., but if the illness be protracted, or if any special operation has to be performed, there is an extra charge.

“If attendance on servants is paid for by employer, or if he send for the doctor, the charge is the same as to himself.

“Certificates of health are to be charged for as visits, except where special investigation is needed, as in certificates for lunacy, insurance offices, etc., when the charge may be from half a guinea to two guineas.

“Vaccination is usually charged for according to the number of visits required.”

Medical Men, Anecdotes of.—See ANECDOTES OF MEDICAL MEN.

Medicinal Foods.—See AUXILIARY FOODS.

Medicine, Administration of, to Children.—No child is naturally desirous of taking medicine, and a child soon discovers the difference between drugs

and sweetmeats, but parents sometimes fail to see this, and much mischief is often done by attempting to deceive children in regard to the true nature of what they are being given. Dr. West has said in connection with this matter: "I look upon deceit as one of the most serious causes of difficulty met with in administering medicines to children. On the first occasion we may succeed by telling a child that the medicine offered to him tastes good, when in truth it is detestable. But we shall fail the second time, and shall raise up a thousand difficulties for the future. If the medicine is absolutely necessary, and the child too young to be reasoned with, he must be compelled to take it, by a kindly display of authority, and his passing sense of injury will soon be forgotten. If he is old enough, tell him that the medicine has been ordered for the purpose of doing him good, and by making use of mild, but at the same time firm words, you will succeed in getting him to take it, especially if, after all else fails, you tell him he is a good child, that it is a pleasure to take care of him, and that you will not fail to tell the doctor of his good behaviour. This truthfulness should be thorough-going; it should even prevent our saying to a child, 'You will soon be cured,' if the contrary really seems probable. When a child is convinced that we are telling him the truth, he feels confidence, we save ourselves much annoyance, and procure the poor little patient great consolation. Leeches had been prescribed for a little child of three years. The leecher, a worthy old man, said, in order to encourage him, 'My dear little fellow, it is nothing.' The child turned to his mother and said, 'Mamma, is that true?' She hastened to answer no, but that she hoped that, for her sake, he would submit. The child became silent, and uttered not a cry nor a complaint during the operation."

It will be seen then from the passage just quoted that the more upright our dealings are with children, even as regards the administration of drugs, the more likely are we to meet with success, and that nothing

in the end is to be gained by practising deception. It is by no means an unfamiliar sight to the physician to see a parent coax a badly disciplined child to take some medicine, it may be a powder or something else, and when all efforts have been in vain, and promises and threats have proved useless, to see her mix it up with such a combination of different stuffs as are likely to do more harm to the child's stomach than any good the medicine is likely to accomplish given in that form. It need scarcely be said that when children have been brought up in this way, the work of the physician is naturally increased, and can only be accomplished in a very unsatisfactory manner.

Suppose, for instance, a child suffering from some chest affection. At the moment the doctor makes his appearance the child begins to cry or bursts out into a rage, refusing to be examined. In this phase of matters it is impossible to get more than an imperfect knowledge of the child's true state, for by the fit of crying or anger the real condition of things has become altered. The breathing is rendered more quick and hurried, the heart beats much more rapidly, the face is flushed, and altogether the child's true state is obscured, and it need scarcely be said that this exerts an injurious influence upon the child. Parents have it in their power to do a great deal in the way of preventing these unpleasant occurrences. Thus, if a mother would occasionally take her child, and make it undergo a mock examination, the examination afterwards by the physician, were such necessary (and how many are exempt), would be deprived in great part of its terror. No parent need be told how important it is in a case of suspected diphtheria for the physician to obtain a satisfactory view of the throat; but frequently from the constant wriggling and tossing about of the head it is almost impossible to obtain more than the most cursory glance.

Much might be done by a mother occasionally introducing her finger into the child's mouth and looking herself at its throat to remove the terror to which such

an operation gives rise when it comes to be done for the first time by the physician. In this way it is in her power to be of real service to the physician, and to simplify his work very considerably. As, to a child, the examination of the chest is also a very formidable proceeding, the mother here also may be of much service. Were she occasionally to subject the child to a fewappings, the act of percussion when obliged to be performed by the physician would be deprived of many of its horrors. The devices had recourse to by parents in order to get their children to take some medicine that has been prescribed by the medical attendant are many and various, but, as we have already seen, nothing is likely to be gained by an attempt at cheating the child, and by far the best way is to tell the child frankly what you are about to give, and to insist in a gentle, yet, if need be, in a firm manner, on the carrying out of your purpose.

Few things tend more to the injury, and even death, of children than drenching them with drugs. There is no doubt that medicine is sometimes requisite for them, but the indiscriminate administration of medicine on every little deviation from the course of health when some variation of diet and regimen would have answered every purpose is a most pernicious habit. A child can encounter few greater evils than that of being subjected to the vigorous discipline of a medicine-giving mother or nurse, by whom it is drugged into a state of delicacy: and many a child, the cause of whose death is not suspected, has thus passed prematurely into the grave. If proper attention is paid to food, clothing, cleanliness, pure air, exercise, and the use of the bath, as judiciously recommended by Bull, Clarke, Combe, Davies, and others, very little medicine indeed, for children, will be needful.

Medicine, A Law in (*Lat. medicina, physic*).—It may be said to be a law in medicine that *whatever is disagreeable to the sensations of a patient is injudicious*; there are undoubtedly many exceptions to

this law in disease; but even as a guide to those exceptions it is deserving of being borne in mind. This is the law of life in every particular affecting health, and it is a law also in the management of the sick; therefore, it should be remembered. "I would make it," says Dr. Moore, "the password to the sick chamber, and I would make every one repeat it before he or she entered the chamber. Nay, it should be written on the chamber-door in large characters." How melancholy is the death-scene of one of the noblest of our poets, Byron, from neglect of this law! "There was also in the scene," writes his biographer, Moore, "now passing around the dying Byron such a degree of confusion and un-comfort as renders it doubly dreary to contemplate. There having been no person invested since his illness with authority over the household, neither order nor quiet was maintained in his apartment. Most of the comforts necessary in such an illness were wanting; and those around him, either unprepared for the danger, were, like Bruno, when he came, bewildered by it, or, like the kind-hearted Fletcher and Count Comba, were by their feelings rendered no less helpless."

"In all his attendants," says Parry, "there was the officiousness of zeal, but owing to their ignorance of each other's language, their zeal only added to the confusion. This circumstance, and the want of common necessities, made Lord Byron's apartment such a picture of distress and even anguish during the two or three last days of his life, as I never before beheld, and wish never again to witness."

Medicine, Music for.—*See* MUSIC FOR MEDICINE.

Medicine, Nature and.—*See* NATURE AND MEDICINE.

Medicines, Domestic.—*See* DOMESTIC MEDICINES.

Medicines, Home.—The following is a list of those drugs which are in most

frequent demand in cases of emergency, and which it would be well for every one to have in the house, more especially if they are living in the country:—

Aromatic Spirit of Ammonia.—This, which is commonly called sal volatile, is a very useful stimulant in fainting, hysteria, or flatulent colic. It may be given to adults in doses of a teaspoonful in a wineglassful of water, and may be repeated at frequent intervals. A drop or two given to children in a little water is also useful in pain due to flatulence.

Castor Oil.—A bottle of the finest cold-drawn castor oil. This acts as a gentle but efficient purgative, and may be given in doses of a teaspoonful to children and a tablespoonful to adults.

Dill Water.—This is frequently given to children during teething, when they appear to be gripped from the presence of wind in the stomach and bowels. It would be better to attack the cause, as wind is merely the result of something more serious. A little magnesia may be given with advantage along with the dill water, which may be given in doses of a teaspoonful or more to a child a year old.

Epsom Salts.—The dose for an adult is half an ounce. They should be taken the first thing in the morning, and warm drinks freely administered afterwards. They form, when so taken, an excellent saline purgative, and by stimulating the orifice of the bile duct they cause an increased flow of bile, and so relieve the system.

Ipecacuanha Wine.—In coughs of a bronchitic nature it may be administered in doses of from five to ten drops to children, and ten to twenty or more to adults. To young infants a drop will be sufficient at a time. When it is wanted to act as an emetic, it must be given in doses of half a teaspoonful to a teaspoonful at a time. In croup an emetic of ipecacuanha wine is often of great service.

Laudanum.—Great care must be exercised in the use of this drug, as evil habits of laudanum drinking may be begun from its too frequent employment for the relief of

pain. For an adult about twenty or twenty-five drops may be given for a dose. This drug should, on no account, be made use of for the relief of pain in children without medical advice, as much harm may result in consequence. Children are very susceptible of the action of laudanum, and none but the physician can decide the utility of employing it in any case.

Lime Water.—This is an excellent medicine to give children along with their milk when there is any tendency to acidity, or where the bowels are relaxed to a greater extent than natural. One tablespoonful should be mixed with three tablespoonfuls of milk.

Magnesia.—This may be kept either in bulk or in powders, containing from twenty to thirty grains apiece. In acidity of the stomach magnesia is one of the best medicines that can be given, and is very certain in counteracting its influence. It may be administered in doses of twenty to thirty grains to adults; and to those under ten years, from five to twelve grains may be given.

Rhubarb.—A small quantity of the finest Turkey rhubarb should be kept in powders of from ten to fifteen grains each, one of which, given with the same quantity of magnesia, will act as a mild purgative in the case of an adult. It is useful in dyspepsia.

Spirit of Mindererus.—To promote sweating in cases of cold, or in slight febrile affections, this is a very useful remedy, and may be given in doses of a tablespoonful to adults, or a teaspoonful to children between six and twelve. It is generally combined with a few drops of sweet spirit of nitre and some camphor water.

Sweet Spirit of Nitre is a valuable refrigerant in fever, and acts as a diuretic as well. It should be given in small doses of five or ten drops largely diluted.

Tincture of the Perchloride of Iron.—A small quantity of this should be kept in the house to arrest bleeding from leech-bites, etc., when other means have failed to do so.

Medicines, Incautious Use of.

—During the early years of childhood the incautious use of medicines by those who

are ignorant of their properties is a fertile source of danger. To some, indeed, the effect may be speedy and fatal; in others impairment of body and mind may be the result, and the child grow up weakly and delicate, and bearing the marks of this injurious practice upon it to its dying day. Too much stress cannot be laid upon the necessity there is for parents abstaining from this pernicious habit of dosing their children with medicines. Were the drugs thus freely employed harmless in their nature, no great mischief might result; but unfortunately there are charlatans in every city ready to take advantage of ignorance, and the number of those who believe in, and are in consequence led astray by them, is truly marvellous.

There is another prejudicial habit which parents frequently have of giving their children purgative medicines with a view to "cool their blood" as it is called. This is generally resorted to in spring and autumn, and is frequently made use of altogether as a precautionary measure, there being people who imagine that medicine taken in health acts as a sort of reserve fund in time of disease. With a little extra care in dieting at such seasons of the year and the substitution of one article of food for another, much of this unnecessary drugging might be avoided.

At the beginning of every illness of childhood, if parents would have recourse to the employment of simple hygienic precautions, instead of flying at once to drugs and using them to the injury and hurt of their children, the simpler ailments would be more easily got rid of, and if anything more serious were the matter with the child, less precious time would be wasted than at present.

Medicines used in Homœopathy.—For home treatment medicine chests are supplied by all homœopathic chemists and chemists and druggists in general with the medicines that are most commonly used. The following list of such medicines is taken from Dr. Epps's "Epitome of the Homœopathic Family Instruc-

tor," a most useful manual for home use and home practice:—

Aconitum napellus.
Antimonium tartaric
Arnica montana.*
Arsenicum album.
Belladonna.
Bryonia.
Camomilla.
China.
Cina.
Cocculus.
Coffea cræua.
Cuprum.
Drosera.
Dulcamara.
Hepar sulphuris.
Ignatia.
Ipecacuanha.
Mercurius.
Nux vomica.
Opium.
Pulsatilla.
Rhus toxicodendron.*
Spongia.
Sulphur.

The medicines marked above with the asterisk, with Calendula, Cantharides, Concentrated Tincture of Camphor and Leæum Palustre are also used for external applications.

Medicines, What to be Careful about in Giving.—Medicines should be given as near the exact time as possible, and in the exact quantity ordered. Never trust to the eye; measure in a graduated glass, or drop it with care. See that the bottles are labelled carefully. A trustworthy nurse will always look at the label on the bottle before taking the cork out, whether she thinks she is right or not. *The habit of caution should be strong with a good nurse.*

In pouring out all medicines, hold the label up, so that no dripping shall soil it. Before measuring the dose, and again after giving it, examine the label with care,—take out the cork and smell the medicine.

Put the cork in tight after using, or the medicine may be rendered useless by exposure to air.

WEIGHTS, MEASURES, ETC.

Apothecaries' Weight.

20 grains (<i>gr.</i>)	make	. . . . .	1 scruple— \mathfrak{z} .
3 scruples	"	. . . . .	1 drachm— \mathfrak{z} =grs. 60.
8 drachms	"	. . . . .	1 ounce — \mathfrak{z} =grs. 480.
12 ounces	"	. . . . .	1 pound— \mathfrak{lb} =grs. 5,760.

Apothecaries' Measure.

60 minims	make	. . . . .	1 fluid drachm= $f\mathfrak{z}$.
8 fluid drachms	"	. . . . .	1 fluid ounce = $f\mathfrak{z}$.
16 fluid ounces	"	. . . . .	1 pint = \mathcal{O} .
8 pints	"	. . . . .	1 gallon = \mathcal{C} .

Approximate Measures.

One minim	varies from	. . . . .	one to two drops.
1 fluid drachm	equals (about)	. . . . .	1 teaspoonful.
2 fluid drachms	" "	. . . . .	1 dessertspoonful.
$\frac{1}{2}$ fluid ounce	" "	. . . . .	1 tablespoonful.
2 fluid ounces	" "	. . . . .	1 wineglass.
4 fluid ounces	" "	. . . . .	1 teacup.

Table for apportioning Doses.

21 years of age	. . . . .	full dose.
14 "	. . . . .	$\frac{2}{3}$ "
12 "	. . . . .	$\frac{1}{2}$ "
6 "	. . . . .	$\frac{1}{3}$ "
1 year of age	. . . . .	1-12th.
3 months of age	. . . . .	1-20th.

Drugs should be kept in bottles properly stoppered, and should be under lock and key. If this latter precaution is attended to, many of the disagreeable accidents which occur from time to time would be avoided. Unless care is taken to see that the bottles are properly closed, and the entrance of air excluded, the medicinal power of the various articles may be impaired; or, what is worse, they may become concentrated, as in the case of laudanum, and thus rendered dangerous.

Medicinal Draughts.—See DRAUGHTS, MEDICINAL.

Medlar.—The fruit of the medlar, which resembles a small pear in shape, is not eatable till it has undergone a singular natural change, which appears to be a process of decay, but it is not really so. It is a wholesome fruit, pleasant to the taste, and those who get over the first repugnance to its putrescent appearance are very fond of it.

Medulla Oblongata (*Lat. medulla*, marrow; *oblongatus*, lengthened; from *ob*, against; *longus*, long).—The *medulla oblongata*, which is in connection with the cerebellum, is connected with the processes of respiration, mastication, swallowing, etc., on the due performance of which the preservation of life depends.—See CEREBELLUM.

Melancholic Temperament (*Gr. mel'as*, black; *chol'e*, bile).—The melancholic, like the bilious temperament, is more fully developed in all that denotes depth and persistence; but there is less energy or activity of mind and body.

Melancholy, Symptoms of (*Gr. mel'as*, black; *chol'e*, bile).—Great apathy; obstinate disposition to dwell upon some mournful topic; sleeplessness; pertinacious silence, and other symptoms of morbid intensity of thought; the pupils of the eyes dilated, with a peculiarly dull, muddy look,

often employed in a fixed, unmeaning stare or vacancy; general slight nervous thrilling of the muscular powers; anxious solicitude, and importance attached to frivolous inconveniences, especially regarding the sufferer's health; love of solitude; dread of death, and fear of eternal punishment. In general, there are well-marked symptoms of indigestion, such as a pallid complexion, dull eye, languid circulation, loss of appetite, furred tongue, disturbed and restless nights, sometimes attended with fever, debility, frequent sighing. Frequently there is a relaxation of the scalp.

Melancholy rarely attacks young athletic persons. It is most common after forty.

The general causes have already been pointed out. Debility, with disorder of some important abdominal organ, as the stomach or intestinal canal, is the usual foundation of this form of mental aberration.

Melancholy, Treatment of.—

The place of retreat and security should be light, airy, pleasant, and cheerful, and the same attention should be paid to the patient's cleanliness, and to the procuring of regular stools and discharge of urine, as in the first form, or madness.

Dr. Moore tells the story of a clergyman, about forty years of age, who happened, while drinking wine, to swallow with it the seal of a letter which he had just received. One of his companions seeing him alarmed, for the sake of a foolish jest, cried out, "It will seal up your bowels." These words taking effect upon his brain while excited by a fright, caused the gentleman to become suddenly insane. From that moment he was the victim of melancholy, and in a few days he refused to swallow any kind of nourishment, alleging as a reason that "he knew nothing would pass through him." The plentiful operation of a powerful cathartic, which his physician forced him to take, failed to convince him of the potency of his bowels. Coaxing and threats were equally unavailing; his mind would not consent that anything should pass down into his stomach, and he died of a mad idea.

Melon.—The melon is very apt to disagree with weak stomachs, and should never be eaten after dinner, or at any other time, without a plentiful supply of powdered ginger.

Membra Tympani. — See DRUM-HEAD.

Membranes (*Lat.*, *membrana*, skin, film).—Membranes are thin expanded substances which line the cavities of the body and envelop all the organs. They are of different kinds, and vary in structure and appearance as they do in function. The various kinds of membranes are described, each under its own heading.—See CELLULAR MEMBRANE, MUCOUS MEMBRANE, and SEROUS MEMBRANE.

Membranous Sore Throat.—

This is a comparatively unimportant disease of the throat in which the structures become covered with a membranous deposit, and which is often mistaken for diphtheria. The tendency in this disease being to spontaneous recovery, and the disease being mistaken for diphtheria certain remedies are apt to be vaunted in diphtheria, because they happen to be used vigorously in membranous sore throat which would have got well under ordinary circumstances. This affection occurs at all seasons of the year. Some individuals are attacked almost annually. Its most frequent immediate cause is a cold bath, or other exposure to cold, while the body is overheated or in active perspiration. Imperfect drainage and emanations from cesspools and refuse heaps are often the apparent remote cause. During the prevalence of diphtheria, common membranous sore throat is often contracted by persons susceptible to sore throats and from other causes, and may then become a starting-point for the severer disease.

Membranous Sore Throat, Symptoms of.—It usually begins with a chill, followed by fever, which is sometimes quite severe; then there are two or

three days of ordinary sore throat. At first, the palate, tonsils, or pharynx are covered with groups of little vesicles, which burst, become excoriated, run into each other, and get covered by a greyish-white pellicle or membrane, resembling the similar false membrane of diphtheria, which begins, however, in another way and under other conditions. The various parts of the throat are swollen, but not nearly as much as in quinsy, and the affection is usually confined to one side. A similar form of sore throat sometimes attends advanced stages of consumption in which there has been severe disease of the throat. The disease usually subsides spontaneously in from eight to ten days. Sometimes it is fatal, however, chiefly in children, from extension of the membranes in the air-passages, death taking place mechanically by suffocation. It is difficult to distinguish this affection from diphtheria, especially when the latter is prevalent; but there is not that profound disturbance of the system due to blood-poisoning which is the chief characteristic of diphtheria. Common membranous sore throat often occurs again and again in some individuals, which is not the case with diphtheria.

Membranous Sore Throat, Treatment of.—The appropriate treatment for this affection is that for ordinary sore throat, with such cleansing and astringent washes, sprays, and lozenges as the attendant physician deems suitable.

Memory and Hope in Old Age.

—Dr. Moore has remarked:—"How instructive is the usual state of memory and hope in advanced life! As the senses become dull, the nervous system slow, and the whole body unfit for active uses, the old man necessarily falls into a constant abstraction. Like all debilitated persons, he feels his unfitness for action, and, of course, becomes querulous if improperly excited. Peacefulness, gentle exercise among flowers and trees, unstimulating diet, and the quiet company of books and philosophic toys are

suitable for him. With such help his heart will beat kindly, and his intellect, however childlike, will maintain a beautiful power to the last. Objects of affection occasionally move him with more than their accustomed force. Young children are especially agreeable to him. When approaching him with the gentle love and reverence which unspoiled childhood is so apt to exhibit, his heart seems suddenly to kindle as the little fingers wander over his shrivelled hand and wrinkled brow. He smiles, and at once goes back in spirit to his childhood, and finds a world of fun, frolic, and loveliness all alive before him, and he has tales of joy and beauty which children and age and holy beings can best appreciate. Next to the children of his children, the old man, whose thoughts have been directed by the Bible, loves the society of persons of holy habits, and as he finds these more frequently among females, such are generally his associates. But all aged and infirm persons he deems fit company, because they, like himself, are busied in reviewing past impressions rather than planning and plotting for a livelihood, or reasoning about ways and means. The past is his own, and he cons it over like a puzzling but yet an interesting lesson."

Meningitis, Cerebral.—See CERE-BRAL MENINGITIS.

Meningitis in Children (*Gr. me'ninx, mening'gos*, membrane; *itis*, affix implying inflammation).—This is often closely connected with a scrofulous constitution, and occurs in children from a few days old to twelve or thirteen years of age. Whatever tends to aggravate the scrofulous condition tends to produce the disease, which is nearly always fatal. Bad air, insufficient or un nourishing food, exposure to cold, uncleanly habits, want of sufficient clothing, etc., all increase the unhealthy tendencies.

The exciting cause of the attack may be congestion of the brain, occurring in eruptive fevers, such as measles and scarlatina, or in long and painful teething; violent and heat-

ing exercise; blows and falls, even if the head is not struck; shocks to the nervous system from sharp pain, or a violent fit of anger or fright, etc.

The possibility of saving the child depends upon recognising at once that something is wrong, and sending promptly for the doctor.

Meningitis in Children, Symptoms of.—Loss of appetite and spirits, constipation, unnatural appearance of the discharges from the bowels—they are pale and slimy and offensive—gradual wasting of the body, not noticed in the face, drowsiness, squinting of one or both eyes, not noticed before, vomiting, unsteady gait, enlarged and glassy look of the pupils. The sleep is disturbed by sudden cries, clinching of the fist, the thumb is turned to the palm of the hand, the eyelids are half closed in sleep, teeth are ground, the head is rolled back and forth on the pillow, and the child moans. The disease may come on gradually with some or all of these symptoms; or it may suddenly appear with sharp pains in the head, and fever; or with convulsions and screams, and a vacant look before the spasms are over. This last way of showing itself is generally during the decline of scarlet fever, or in whooping-cough or painful teething.

Meningitis in Children, Treatment of.—The child must be kept absolutely quiet in a dark room, spoken to in the gentlest way; never rocked in cradle or chair; never walked about the room, or moved backwards and forwards on the knees, and must be kept with its head high on the pillow. Ice-bags are sometimes thought bad as applied to the heads of very young children; in which case keep soft linen rags soaked in ice-water; wring out and apply a fresh one before the last has had time to get warm.

The child's food need be nothing but milk and gruels; and there must be only the gentlest lifting when necessary, and always on the pillow, the head being kept high at the time.

Several times in the course of the disease the symptoms may seem to pass away and the child to improve. The nurse, however, must not relax her attention, for there is no safety for the child until, for instance, the pupils contract quickly under a strong light. About one child in four recovers from the disease, and the recoveries are among the children whose first symptoms of brain disorder are promptly attended to.

Meningitis, Spinal.—See CEREBRAL MENINGITIS.

Meniscus Glass.—See SPECTACLES.

Menstruation (*Lat.* *menstruum*, monthly service; from *mensis*, a month).—The period of puberty in the girl is marked by the appearance of a discharge of blood at the external organs of generation. This discharge comes from the interior of the womb, and recurs in health with great regularity every twenty-eight days, or once a month, for a period of thirty years. The cause of this discharge is the ripening of what is known as a Graafian follicle, and the escape of an ovum, or egg, into the cavity of the womb. The bodies concerned in the maturation, or ripening, of these follicles are the ovaries, which are two in number, of an almond shape, and situated one on either side of the womb, with which they are connected by means of two tubes about four inches long. Down these tubes the discharged ovum travels till it reaches the interior of the womb, from which, unless impregnation occurs, it is washed away in the monthly discharge.

The colour of the menstrual blood is at first dark, but becomes brighter as the period advances. It has this peculiarity as distinguishing it from ordinary blood, that it does not coagulate on exposure to the air. The reason of this is, that in its passage from the womb the blood becomes mixed with certain secretions which tend to prevent this occurring. The amount of blood lost at each monthly period varies, but usually it averages from three to four ounces.

If the quantity becomes excessive, as it sometimes does, the health of the woman suffers. The flow is not, as a rule, established at once; sometimes several months elapse between the first and second menstrual period; but when a few months are over, it recurs with great regularity, sometimes coming on even to the hour.

The time of life when menstruation begins varies, but may be said to occur in temperate climates between the fourteenth and sixteenth year. Cases, however, are on record in which children a few years or even a few months old have had a bloody discharge from the external organs of generation, which continued to recur at regular intervals afterwards. These, as may be supposed, are cases of extreme rarity; but in our own country many cases are met with in which a girl has begun to menstruate when she was ten or twelve years old, and others in which the monthly discharge has been delayed till the twentieth year, or even longer.

There are several circumstances which operate powerfully in accelerating or retarding the menstrual flow. Of these the influence of climate is most marked. In India and other countries where the heat is great, girls begin to menstruate earlier than they do in more temperate climates. They arrive at perfection sooner, but their beauty is more short-lived, and they soon become aged, while those who inhabit more northerly climates, and are exposed to intense cold, are longer in coming to maturity, but they retain the characteristics of womanhood longer, and their beauty to a comparatively old age.

But, besides the influence which climate exerts, there are other circumstances at work which tend to hasten the occurrence of puberty in the girl. Thus anything which tends to produce effeminacy—a lazy, listless life; undue mental excitement, either caused by the reading of sensational novels, by conversation or the like; late hours, irregular habits of sleep, highly seasoned articles of diet, and stimulants, have all a tendency to accelerate the occur-

rence of menstruation in the girl. Among the upper classes of society, where most or all of these circumstances are at work, menstruation occurs earlier than it does in the lower classes, where muscular exercise is more frequently taken, where the articles of food are plainer, where the mental excitement is not so great, and where the whole surroundings are more conducive to the development of a healthier and hardier frame. In towns where all the above influences are at work, girls menstruate earlier than they do in the country.

It has been said that the monthly periods when once established continue to recur at regular intervals in a woman who is healthy for about thirty years, during which time she is capable of conceiving. When a woman is said to be regular in regard to her courses, it is not merely meant that she is regular as to time, but that she is regular as to *quantity* and *quality* as well.

Menstruation ceases during pregnancy, and generally during the period of suckling as well. Diseases which exhaust the strength and impair the vital energies of the body, generally lead to a stoppage of the monthly discharge. This is frequently seen in the case of consumption and other diseases of a debilitating nature.

Menstruation, Beginning of.—

The appearance of menstruation in the girl is ushered in by certain well-marked symptoms, the significance of which should not be overlooked. About this time languor and general unfitness for exertion are complained of; there are dull, aching pains in the region of the pelvis; a feeling of dragging and weight about the small of the back is also complained of. There is a dark ring under the eyes. These pass away as the menstrual function becomes established. The change which menstruation works upon the girl is great. Her frame becomes rounder and fuller, the hips broaden, fat becomes deposited in various parts of the body, the breasts enlarge, and in her manner she becomes more retiring. It seems as if a great mental change had

come over the girl, and there had begun to dawn upon her mind the consciousness of that important mission she was destined to fulfil. From this time her demeanour is altered, and around her person there gathers a sacredness hitherto unknown. Her bearing also becomes more dignified; she exchanges the pursuits of girlhood in which she has so long found pleasure for those of maturer years, and consciousness of the position she occupies now fills her mind.

About the first appearance of this discharge, the constitution undergoes a very considerable change, generally, indeed, for the better, though sometimes for the worse. The greatest care is then necessary, as the future health and happiness of the female depends, in a great measure, upon her conduct at that period.

She should be careful to take exercise daily in the open air, to partake of a wholesome, nutritious diet, and not to indulge in tight clothes. The exercise should be free and active, which will be found to promote digestion, to enliven the spirits, and to insure a proper discharge. It is worthy of the special attention of young women, that one seldom meets, at this period, with complaints from obstruction amongst the more active and industrious part of the sex; whereas the indolent, inactive, and luxurious are seldom free from them.

After the menses have begun to flow, great care should be taken to avoid everything that may tend to obstruct them. Females ought to be exceedingly cautious of what they eat and drink at the time they are out of order. Everything that is cold, or apt to sour on the stomach, and all things which are found by experience to disagree, ought to be avoided.

Exposure to cold is extremely hurtful at this period. More females date their disease from cold caught while they are in this situation than from all other causes. A degree of cold that will not in the least hurt them at another time will, at this period, often be sufficient entirely to ruin their health and constitution. It is not meant that they should then confine themselves

wholly to the house and warm rooms, but that imprudent exposures should be guarded against, and the clothing be somewhat warmer than usual. We have lately heard of a young lady who was suddenly seized with mental derangement after the improper use of cold water at this particular time; and all the means hitherto employed to restore her health and reason have altogether failed.

Menstruation, Cessation of.—

The final cessation of the menstrual discharge, like that of its commencement, is a critical period with all women, and, therefore, we shall here say a little on the treatment necessary at that time; and also of painful menstruation. The retention and suppression of this discharge are distinct diseases, which are treated of under those heads respectively. It seldom ceases all at once, but, for some time before its stoppage, becomes somewhat irregular, both as to the periods and the quantity. The time of this final cessation is always a critical one, because the constitution then undergoes a considerable change, and there is often a strong tendency to the formation of obstinate and painful chronic complaints.

The grand object of treatment at this period should be to quiet irregular local irritation, wherever necessary, by gentle laxatives and moderate opiates or anodynes, and to prevent any incidental stimulus or painful mental emotion. The diet should be nutritious, but plain; the exercise moderate; and costiveness carefully prevented by attention to diet, and by lenient warm aperients.

When the discharge happens to disappear suddenly in women of a full, plethoric habit, the diet should be more spare than usual, regular exercise be indulged in, and, every other day, an opening draught should be taken.

If ulcers break out in the legs, or any other part of the body, at this period, they ought to be regarded as critical discharges; and the wisest practice is not to interfere with them further than is necessary to keep

them clean, and prevent them from spreading.

Menstruation, Painful.—Sometimes menstruation recurs every month, with little or no irregularity in this respect, but it is accompanied with great local pain, which is occasionally very severe and forcing, especially about the loins, hips, and region of the womb. The quantity thrown forth may or may not be too small; but what chiefly demands our attention here is the great pain accompanying the flow.

This pain is owing either to a deranged state of the general health, or to a spasmodic constriction of the extreme vessels of the womb itself. The former is, in our opinion, the most frequent cause. And one of the most efficacious plans of treatment with which we are acquainted is to administer from thirty to forty, or even fifty, drops of the volatile tincture of guaiacum, on sugar, or in milk and water, three times a day; with an aperient pill every other night, so that the bowels may be kept regular, without being purged. At the same time, the patient ought to take much exercise daily in the open air, either on horseback or on foot; to be attentive to the rules of diet, and to mingle with cheerful society. A warm bath at ninety-six degrees, every other morning, will likewise be advisable; and change of air and scene will much conduce to recovery.

Menstruation, Suppression of.—Chlorosis (which *see*), is a complaint of young girls in which the monthly discharge is either absent altogether, or occurs irregularly and in small quantity; and suppression of the menses, which signifies an interruption to the discharge, may occur at any time of life after it has become habitual. It may, therefore, show itself in women of any age, previous to forty-five or fifty.

Of course the chief symptom is the disappearance of the usual monthly discharge, with which various strange and unusual feelings are associated, and differing in

different individuals; such are a feverish heat and dryness of the skin, flushing of the face, headache, pains in the loins and back, costiveness, difficulty of breathing, palpitation of the heart, and sometimes bleeding from the nose, stomach, or lungs.

The most frequent causes of this suppression are, great anxiety of mind; suddenly suppressed perspiration from cold, especially if occurring while the discharge was flowing; sudden alarm, or terror; protracted fever; scanty and poor living.

Menstruation, Suppression of, Treatment of.—The principal indications of treatment are, to excite the action of the vessels of the womb, and to increase the tone of the system in general when weak or enfeebled, or to allay irritation in it when the complaint occurs in a full plethoric habit.

Mental Activity during Sleep.—A remarkable instance of mental activity during sleep is given in Abercrombie's well-known work on "The Intellectual Powers." An eminent lawyer had been consulted respecting a case of great importance and much difficulty, and had been studying it with intense anxiety and attention. After several days had been occupied in this manner, he was observed by his wife to rise from his bed in the night and go to a writing-table which stood in the bedroom. He then sat down and wrote a long paper, which he put carefully by in the desk, and returned to bed. The following morning he told his wife that he had had a most interesting dream: that he had dreamt of delivering a clear and luminous opinion respecting a case which had extremely puzzled him, and that he would give anything to recover the train of thought which had passed before him in his dream. She then directed him to the writing-desk, where he found the opinion clearly and fully written out, and which was afterwards found to be perfectly accurate.

Mental and Muscular Activity.—Facts illustrative of the influence of

mental co-operating with and aiding muscular activity must be familiar to every one, but the principle on which they depend is not sufficiently attended to. Everybody knows how wearisome and disagreeable it is to saunter along, without having some object to attain; and how listless and unprofitable a walk taken against the inclination, and merely for exercise, is, compared to the same exertion made in pursuit of an object on which we are intent. The difference is simply that, in the former case, the muscles are obliged to work without that full nervous impulse which nature has decreed to be essential to their healthy and energetic action; and that, in the latter, the nervous impulse is in full and harmonious operation. The great superiority of active sports, botanical and geological excursions, gardening and turning, as means of exercise over mere measured movements, is referable to the same principle. Every kind of youthful play and mechanical operation interests and excites the mind as well as occupies the body; and, by thus placing the muscles in the best position for wholesome and beneficial exertion, enables them to act without fatigue for a length of time which, if occupied in mere walking for exercise, would utterly exhaust their powers.

The advantages of combining harmonious mental excitement with muscular activity have not escaped the sagacity of Dr. Armstrong, who thus notices them in his frequently reprinted poem on the "Art of Preserving Health," but without giving the physiological explanation:—

*"In whate'er you sweat,
Indulge your taste. Some love the manly toils,
The tennis some, and some the graceful dance;
Others, more hardy, range the purple heath,
Or naked stubble, where, from field to field,
The sounding covies urge their lab'ring flight,
Eager amid the rising cloud to pour
The gun's unerring thunder; and there are
Whom still the mead of the green archer
charm.*

*He chooses best whose labour entertains
His vacant fancy most: THE TOIL YOU HATE
FATIGUES YOU SOON, AND SCARCE IMPROVES
YOUR LIMBS."*

Mental Derangement.—See IN-
SANITY.

M. D.

Mental Disorders, General Treatment of.—The general treatment of all mental disorders may be comprised under the following heads:—

1. To remove, as far as possible, the cause of the passion, whenever passion is predominant.

2. To inspire, according to circumstances, an opposite passion as a means of cure.

3. To present the mind with a variety of scenes and objects of a different nature to that of our prevailing passion.

4. To affect the feelings by the power of music.

5. To attend to the state of the surface; and

6. To observe a guarded regimen, during the prevalence of any passion, in food, drink, and medicine.

The influence of mind upon body will be found to have an important bearing upon the physical health of every household. It should never be lost sight of in the conduct of a family. The domestic affections, although there is a much higher motive for their cultivation, should, merely as a matter of hygiene, be carefully nurtured. The cheerfulness and gentle emotions which are engendered by all the kindly relations between the various members of a family are just those pleasurable excitants of the mind which are most favourable to the healthy actions of the body. The strictness of domestic discipline must be tempered by affection, and faults corrected, not with the violence of temper, but the calm judgment of duty. Many a child has had his body fretted into disease by a mind kept in constant terror by the ever-impending blow of a severe parent. The cowed child is never a healthy one. Freedom of life in every respect is essential to vigour of development. Childhood requires the encouragement of an ever-present confidence in the love of those upon whom its helplessness makes it dependent. If forced to shrink at every moment from the severe eye of authority, and hide itself on the first sound of an approaching footstep, the child will sure to be a timid,

puling, and weak creature, to whom fulness and strength of growth are impossible.

Many of those vague ailments which afflict womankind may be attributed to mental causes. Their effects are visible enough in the early fading of beauty, the wasting of the body, and the rapid decay of all the vital powers. Companionship and sympathy so eagerly sought for in marriage, but, alas! found so often wanting, are essential to the happiness of every loving wife. The sadness of disappointment on missing them is, we are persuaded, a frequent cause of the ill health of married women. The excessive solitude to which the wife is often condemned by the long absence of a husband devoted to business, or by his anxious abstraction during his rare presence, is a life so different from that expected by the sanguine bride, that the sensitive heart of woman must realize it with a shock likely to shatter both mind and body.

Mental Emotions, Effect of, on Skin.—See SKIN, EFFECT OF MENTAL EMOTIONS ON.

Mental Peculiarities in Pregnancy.—Certain mental peculiarities are far from uncommon in the pregnant female; thus, many women who exhibit the mildest and most amiable of tempers before marriage, on becoming pregnant undergo a remarkable change in this respect, becoming at these times passionate, fretful, and irritable. On the other hand, pregnancy may exert a beneficial influence upon a woman, and many who were before fractious and ill to do with have their tempers frequently altered for the better on being with child.

Mercurial Poisoning.—Mercury is used by hatters to remove hair from skins. A solution is applied to the skin, and, after drying in a chamber, the hair is got rid of by beating or brushing, which liberates a great deal of some mercurial compounds. The effects upon the health are those of chronic poisoning, of which one

of the most prominent is that nervous complaint called mercurial trembling.

Mirrors are now covered with an amalgam of mercury and tin foil, which, when heated, discharges the mercury in the form of vapour. The process is so injurious that in a certain French manufactory the workmen worked only six hours in the day, and only for two or three days in a week. The remedy for the trouble consists in abolishing mercury, and coating mercury with silver. A palliative has been found, consisting in the sprinkling of ammonia on the floors.

In fire-gilding, mercury and gold in the form of a paste are applied to the surface, and the mercury is volatilized by heat; this gives a more solid and enduring surface than electro-plating, and the dangerous steps of the operation cannot be conducted in closed boxes.

Both mercury and arsenic are driven off by heat in the process of roasting certain ores. Mercury seems to be very much the more dangerous to the health, causing sore mouths, loss of the teeth, general debility, or "cachexia," acute pains, sleeplessness, spasms and tremor, and paralysis of the muscles and intellectual feebleness, besides some symptoms resembling those of syphilis, eruptions, swellings over the shin-bone, and glandular enlargement, with deep ulcers of the mouth and nose. Altogether, the occupation of those who are forced to inhale mercury is one of the very worst.

Metal Workers, Duration of Life in.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Metheglin (*Welsh*, meddyglyn; from medd, honey; llyn, liquor).—Metheglin differs but little, if in any respect, from mead, which see.

Middle Ear.—The middle ear, or drum proper—the tympanum—lies, as its name would indicate, between the external ear and the internal ear, or labyrinth. The middle ear is an air cavity, and hence a characteristic of warm-blooded animals, or

of those who live on land. It comprises the Eustachian tube, which connects it with the upper part of the throat, and the mastoid portion of the temporal bone. The middle ear contains the smallest bones of the human body, the so-called auditory ossicles, viz., the hammer, the anvil, and the stirrup, thus named simply from their resemblance to these implements.

Through this important cavity, the middle ear, pass two nerves, one the facial, on its way to the face, and the other really a branch of the facial, the so-called chord of the drum (*chorda tympani*), on its way to the tongue.

The middle ear is the seat of most of the diseases of the organ of hearing. Of its various parts the drum cavity is the most delicate and complicated in structure, and most liable to disease. Its complicated anatomy forms a highly interesting subject, but the usefulness of an intimate knowledge of it to the non-professional reader is doubtful, and the same may be said of the anatomy of the internal ear.

Midriff.—See DIAPHRAGM.

Miliaria (*Lat. milliarius*, containing a thousand; from *mille*, a thousand).—Miliaria, or milary fever, is an eruption of very small vesicles, over any or every part of the body, occurring during the progress

of other diseases, when attended with profuse perspiration; as also in women during their confinement, if, from improper diet, superabundance of clothing, or accidental indisposition, they are brought into profuse perspiration.

Miliaria, Treatment of.—The only treatment required is cool air, moderate clothing, and light diet.

Milk.—As this is the natural food of the young, it may be regarded as a model article of nourishment. It furnishes in due proportion all the nutriment required by the growing immature animal.

Cow's milk is nearly opaque under ordinary conditions of light; it possesses a straw yellow cover, which becomes more marked when the animal has plenty of green food. Milk has a soft, slightly sweet, taste; it has also a faint animal odour when warm and fresh. When milk stands for a time, the first change which takes place is the rising of the cream, owing to the lower specific gravity of the globules of milk-fat, which at first are uniformly scattered through the milk. These minute globules are the chief cause of the white opacity of milk; but there are many still more minute globules of casein, the chief nitrogenous nutrient of milk.

MEAN COMPOSITION OF THE MILK OF VARIOUS ANIMALS.

	Woman.	Cow.	Goat.	Sheep.	Ass.	Mare.
Casein (cheesy matter and insoluble salts)	3.35	4.55	4.50	8.00	1.70	1.62
Fatty matter	3.34	3.70	4.10	6.50	1.40	0.30
Sugar of milk and soluble salts	3.77	5.35	5.80	4.50	6.40	8.75
Water	89.54	86.40	85.60	82.00	90.50	89.33
	100.00	100.00	100.00	100.00	100.00	100.00

Milk, Adulteration of.—See ADULTERATION OF MILK.

Milk and Disease.—Milk has sometimes been known to spread disease, either through its direct contamination with the

poison of disease during the milking of the cows, or through the water used in rinsing milk-cans, or in diluting the milk. The milk itself is sometimes unwholesome, owing to the unhealthy condition of the cow from which it has been taken.

By keeping, milk turns sour. This takes place especially in hot weather, and the change first affects milk which has not been kept in clean vessels and in pure air. The souring of milk, however brought about, is marked by the presence of an acid—*lactic acid* (*Lat. lac, milk*)—which is formed from the peculiar sugar of milk known as *lactose*. It may be retarded by the addition of a little carbonate of soda, or by a little boracic acid.

Milk and Soda Water.—Take half a pint of milk and sweeten it with a teaspoonful of refined sugar; bring it almost to the boiling point, and pour over it a bottle of soda water. When there is much acid secretion in the stomach, this will prove an excellent way of administering milk.

Milk, Condensed.—See CONDENSED MILK.

Milk, Constituents of.—See CONSTITUENTS OF MILK.

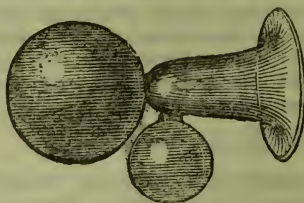
Milk Fever.—In this disorder the breasts become gradually distended with milk. The time that transpires before the secretion of milk is thoroughly established depends both on the constitution of the patient and on the character of her previous labour. The first secretion of the milk is accompanied by more or less inflammatory fever.

Milk Fever, Treatment of.—The bowels should be freely opened, and cooling drinks should be given with a very spare diet. The utmost tranquillity must be observed, the apartment kept cool and moderately lighted, and the head be somewhat elevated and bathed with cold or iced water. In general no more is necessary, and the febrile state will be relieved by the flow of milk from the breasts.

Milk, How to Dry up.—When a woman has been able to maintain her child at the breast for the usual period—that is

to say, for about nine months—she will generally find little difficulty with her breasts when the time for weaning has arrived. Should it happen, however, that the breasts become swollen, hard, and distended on the child being weaned, recourse must be had to measures calculated to remove these symptoms. For the relief of the tension a little milk may be withdrawn from the breasts by a breast exhauster. The quantity thus taken away must not be excessive, as the glands will immediately begin again to secrete in larger quantity than before, and the feeling of pain and distension will return. Only sufficient, therefore, must be drawn off to relieve the state of tension from which the patient suffers.

When from any of the causes that have been already mentioned the mother finds it



BREAST EXHAUSTER.

necessary to discontinue nursing her child, or where a woman has given birth to a dead-born infant, this condition of the breasts is most apt to occur. At the outset, when the breasts become swollen and painful, mild saline aperients should be administered, and friction of the breasts with warm oil be resorted to several times a day. The saline aperients which will answer best are a little Epsom salts or a seidlitz powder. The application to the breasts of plasters, such as belladonna or soap, are frequently had recourse to, a hole being cut in the centre for the nipple, but a lotion, consisting of eau de cologne and water, will frequently answer better.

Milk in Sick Nursing.—This article of diet, which forms the sole suste-

nance of young animals, and their principal food during the early years of life, is one of the importance of which in the treatment of disease cannot be over-estimated. When the stomach is young and tender, Nature provides this substance for the support of her offspring, and the manner in which life is sustained and growth enabled to go on is sufficient proof of its great nutritive value; and when the stomach is again in a feeble state, and the system requiring nourishment with as little expenditure of energy as possible, what form of food should be able to answer so well as that which was the only source of supply in early life? For easiness of digestion and for nutritive value there is nothing to take its place, and in the treatment of all diseases milk ought to occupy the very foremost place. Like all fatty foods, it is more easily digested when some condiment is given along with it, and for this purpose nothing answers so well as sugar. Salt and other substances may also be used, but sugar on the whole does best. For children who are deprived of the breast, ass's milk is that which is most suitable as a substitute, owing to its more nearly resembling human milk in composition than any other. Goat's milk is also very good, but as there is more or less difficulty attending the procuring of these, recourse is had in the majority of cases, and almost always in disease, to cow's milk. When cow's milk is given cold, it is apt to produce diarrhoea in some people, and it also increases the urinary secretions, so that, in order to prevent these occurrences, it should be boiled. Water should not be added, as the diarrhoea may return, or be kept up if the milk is thus diluted, even although it has been boiled. Milk answers best in the treatment of disease if used as it comes from the cow; that is, before the curd and whey have separated. The component parts of milk are not so good, nor do they prove so serviceable, as the milk itself in which they are combined. The cream in the milk, and before separation has occurred, is the most easily digested and most nutritive part of the milk, but when separated it does not answer so well

in the treatment of disease. The curd also when given alone is indigestible, and whey is apt to prove flatulent, although containing much nourishment

Milk, Skim.—When the cream which rises on milk is removed, the liquid remaining is poorer in milk-fat and in total solids, but its percentage of milk-sugar is increased. It is a light and digestible food, but the ratio between its flesh-forming and heat-giving nutrients is different from that of fresh milk, the heat-givers being much lower. Its composition varies much according to the extent to which the cream has risen and been removed. The following is an analysis of skim milk:—

COMPOSITION OF SKIM MILK.

	In 100 parts.
Water	89.0
Caseine	4.3
Milk-fat	0.4
Milk-sugar	5.5
Mineral matter	0.8

Milk used Medicinally.—When milk is used medicinally, it is often serviceable to dilute it with Pyrmont, seltzer, soda, or lime water. The two last, especially the soda water, prevent acidity, and make it sit easier on the stomach. To obviate costiveness, which milk is apt to induce, it is often proper to mix brown sugar or magnesia with it, or to boil it with oatmeal or veal broth.

In general, milk is improper in inflammatory fevers, unattended with pustular eruptions; in bilious fevers; in scrofulous cases; and in rickets. It seldom agrees with hypochondriacs, with the plethoric, the phlegmatic, or the corpulent, and disagrees particularly with tipplers, or those addicted to strong liquors.

Milk is used medicinally in consumption, especially in its earlier stage; in gouty affections, after the paroxysm has passed off; and in many spasmodic and nervous affections, and disorders of the general health.

By boiling milk, its albuminous part is not coagulated into a mass like the white of an egg, on account of the large quantity of

water through which it is diffused; but a thin pellicle forms on the surface, which, if removed, is immediately replaced by another, and thus the whole of the albumen may be separated in successive portions. The effect of this process is therefore to diminish the nutritive quality of the milk; but it may at the same time render it more easily digestible. We have known many invalids who could take boiled milk, but were unable to bear that fluid in its natural state.

Mill-dams, etc., Water from.—

Water from mill-dams, marshes, ponds, etc., is very apt to be impure, not having even the uncertain benefit of filtration through the earth to strain out the germs of various diseases. Many attacks of ague, bilious fever, and typhoid fever can be traced to drinking such water, and the eggs or young of sundry parasitic worms, and so forth, probably often gain an entrance into the stomach, and from thence to other parts of the system, in the same way.

Millet, Italian — or Great Indian millet—is cultivated in the East, and is used in Egypt and Nubia as human food, as well as for the fermentation of beer. A yellow variety called Golden Millet is sold by some grocers and corn-chandlers in this country for making puddings, and is very delicate and wholesome.

Millet, Panicled. — This is the smallest-seeded of the corn-plants, being a true grass; but the number of the seeds in each ear makes up for their size. It grows in sandy soils that will not do for the cultivation of many other kinds of grain, and forms the chief sustenance in the arid districts of Arabia, Syria, Nubia, and parts of India. It is not cultivated in England, being principally confined to the East. The nations who make use of it grind it, in the primitive manner, between two stones, and make it into a diet which cannot be properly called bread, but rather a kind of soft, thin cake half baked. When we take into account that the Arabians are fond of liz-

ards and locusts as articles of food, their *cuisine*, altogether, is scarcely a tempting one.

Mind, Cheerfulness of, a Medicine.—See CHEERFULNESS OF MIND A MEDICINE.

Mind, Effect of Under-Feeding on.—The bad consequences of defective nourishment are not confined in their operation to the bodily constitution of the labouring poor. Their minds also are deteriorated. The pressure of poverty is unfavourable to the growth of refinement and morality, and crime and turbulence are never so much to be dreaded as during times of scarcity, and manufacturing or agricultural distress.

Among the poorer classes, the children as well as the parents suffer both physically and morally from insufficient food. Their diet, being chiefly of a vegetable nature, and consisting of porridge, potatoes, and soups, with very little butcher's meat, proves far from adequate to carry on vigorous growth in the one, or repair waste in the other; hence arise in the young an imperfect development of the bodily organization, a corresponding deficiency of mental power, and a diminished capability of resisting the courses of disease. In workhouses, and other charitable institutions, ample evidence of these deficiencies obtrudes itself upon our notice, in the weak and stunted forms and very moderate capabilities of the children.

Mind, Influence of, in Pregnancy.—Much might be said under this head as to the supposed influence which the mind exerts upon the child in the womb, in producing flesh-marks and malformations of different kinds; but the most patient researches go to prove that these occur frequently in the children of those who are quite unable to account in any way for their appearance, who can recollect no mental impression to which their occurrence might be attributed; while, on the other hand, women who have been haunted

by the idea that their children would be born with certain defects and blemishes, in consequence of having seen during their pregnancy these defects and blemishes upon others, have been both surprised and delighted to find themselves the mothers of healthy children, free from all those marks they so much dreaded. One thing, however, is certain, and demands great attention, and that is that anything which causes a state of mental depression in the mother will operate injuriously upon the health of the child.

Mind, Influence of, in Transmission of Impressions.—Dr. Moore has observed “that impressions received by the mind of the parent are, in their influence, transmitted to the offspring, is undeniable, since experiments on animals have demonstrated the fact in the clearest manner. Thus, Mr. Knight, who investigated the subject for a series of years, tells us ‘that a terrier, whose parents have been in the habit of fighting with polecats, will instantly show every mark of anger when he first perceives merely the scent of that animal. A young spaniel brought up with this terrier showed no such emotion, but it pursued a woodcock the first time it ever saw one. A young pointer, which had never seen a partridge, stood trembling with anxiety, its eyes fixed, its muscles rigid, when conducted into the midst of a covey of those birds.’ Yet each of these dogs is but a variety of the same species, and to none of that species are these habits given by nature. The offspring of the shepherd’s dog in active service instinctively follows the flock, while, if his father or grandfather have been taken away from this occupation, he will have lost the art, and be difficult to teach. A pup of the St. Bernard breed, born in London, when winter came and the snow was on the ground, took to tracing footsteps after the fashion” of his ancestors.

“It is important to observe that training counteracts propensity even in a dog; and although the education of a human being

does not destroy bodily temperament, yet, so long as the faculties are clear, it may always be subdued by superior motives. It is only the brutal part of man’s nature that seems to be derived. Truth, knowledge, religion, are not propensities, but they are the correctors of all error. With their aid alone can we restrain and guide impulse to right ends; but, of course, the mind that is not amenable to moral law must be altogether subject to brute instincts, and ought to be treated accordingly—by physical restraints, and the removal of excitants.”

Mind, Influence of, on Body.—That there is an intimate relationship existing between mind and body by which they act upon and influence one another, all must admit.

In health the influence of the mind strongly directed to a part, and concentrated sufficiently long upon it, will produce in the first instance functional derangement, and afterwards lead to serious organic mischief. Thus when attention is directed to the heart, it beats with greater rapidity, and the individual is then said to suffer from palpitation; and should the palpitation continue unchecked for a sufficient length of time, it leads to enlargement, or as it is technically called, *hypertrophy* of that organ. Now, when the influence of the mind upon the body under the ordinary conditions of health may be of such a serious nature, how much more serious must that influence be when directed towards an organ already enfeebled by disease. In health the changes which are observed to take place in the countenance of a person who is under the influence of shame or fear must be familiar to all,—the crimson cheek in the one case, the deathly pallor in the other: and when such wonderful effects are manifested when the bodily powers are strong and vigorous, how great must be the effect when these are debilitated by disease! Hence the imperative necessity for preserving the patient as far as possible from the influence of passion, and preserving his mind in that calm and equal state which

acts so beneficially upon the body in the time of disease. If a patient's attention is always directed to the seat of suffering, his misery is aggravated and his pain greatly increased; but endeavour to withdraw his attention, and, if you succeed, you will allow the part that rest which is so necessary to the successful carrying out of those restorative changes which in disease nature is ever working.

But to withdraw a patient's attention from himself is no easy task, and frequently it lies completely beyond his own power so to do. Did we, however, instead of urging the necessity of this upon the patient, endeavour to lead his thoughts into a different channel, we should accomplish more for him, and succeed better in the attainment of the object we have in view, than by all the arguments at our command, however eloquently uttered. If you tell the patient that to habitually concentrate his mind upon himself is bad; if you tell him that by thinking about his disease he will aggravate the symptoms and increase his malady, and that by withdrawing his attention from the seat of suffering he is doing what is best to facilitate recovery and bring about a speedy cure, he will answer you that he is aware of all that, and will agree with everything you have said; but the mental concentration still remains, the symptoms are aggravated, and recovery is delayed.

The fact is that the patient has not the power to cope with this influence so as to overcome it, and if, instead of urging him so to do, we engage his attention involuntarily and get him thus thoroughly interested, we shall have accomplished for him, without an effort on his part, greater and more permanent results than could have been attained by many weary hours of struggling and fighting. By thus engaging his attention involuntarily you will have secured the desired rest to the part, and while he has been forgetful of his sufferings, be assured that the work of recovery has been going on. The best means by which to attain this end is to tell the patient a good story that has a pleasant ending, or to read to him some-

thing in which he can feel interested. Anything that weighs upon a patient's mind, producing care or anxiety, always exerts a depressing influence upon the nervous system, and tends to retard recovery. Everything of this kind should, therefore, be carefully guarded against, and, as far as possible, evenness of mind maintained throughout. To worry a patient with household affairs when suffering from disease is certainly not the way to bring about a speedy return of health and strength.

Mind, Influence of Rest on.—
See REST, INFLUENCE OF, ON MIND.

Mindererus, Spirit of.—*See* MEDICINES, HOME.

Mineral Foods.—The importance of water in this group is at once evident; and although such large quantities are found in all our solid food, it is necessary to add more, for the purpose of dissolving all those constituents which are necessary to the functions of life. Although the group of heat-giving and flesh-forming foods are, many of them, insoluble in water, they are rendered so during the process of digestion. Starch is rendered soluble by the action of the saliva of the mouth, by which it is converted into sugar. The proteids are acted on by the gastric juice, and are thus rendered soluble in water. The fats taken as food are decomposed by the bile and the pancreatic juice, and converted into soluble soaps, which are readily dissolved by water and taken into the blood.

Water is taken either cold or hot. It is made into soups, tea, coffee, and chocolate, by the infusion and boiling in it of various substances.

The other substances, besides water, belonging to the mineral group, are common salt and salts. Common salt is chloride of sodium, and exists in abundance in seawater. It has the power of preserving vegetable and animal substances from decomposition, and is found in certain quantities in the bodies of all animals. The human

body contains about three ounces, which is principally found in the blood. Unless certain quantities are taken daily, diseases characterized by debility are likely to occur. It may be taken in doses from day to day, and no harm occur, as that which is not necessary for the use of the body is got rid of.

The other saline matters found in the human body, and which are excreted by the urine and bowels, are obtained from all forms of food. Animal and vegetable foods lose some of these saline matters by cooking; hence the importance of taking uncooked food of some kind or another every day. This should be effected by fruit, or vegetables in the form of salads. An instance of the value of fresh vegetables as an article of diet is seen in the treatment of sea-scurvy. This disease is brought on by the absence of fruit, vegetables, or meat on board ships. It is prevented by the supply of lemon or lime juice, and vegetables cooked and preserved in tins.

Mineral Waters.—These are mostly employed for the treatment of disease, but a few so-called mineral waters find a place as beverages. Artificial mineral waters are imitations of mineral spring waters, made by dissolving the salts which constitute the basis of the natural mineral waters in ordinary water impregnated with gases, especially carbonic acid gas. Experiments in their manufacture were made as early as the 16th century, but they have been produced in perfection only within the last sixty years, since chemical analysis has become an operation of minute exactness. Artificial mineral waters have some advantage over natural waters. The supply of the latter, exported from the springs of Continental Europe, is inadequate for the demand, and most natural mineral waters lose materially by bottling. The springs, too, are subject to many changes, and frequently vary in the quantity or the relative proportion of their respective ingredients. Artificial waters, on the contrary, are prepared according to analyses which represent the natural mineral waters when

in their best condition. They are always the same in composition, in consequence of the technical perfection of their manufacture, and they produce the same general effect as the natural waters. They are more highly charged with carbonic acid gas than the latter, which insures their keeping in any climate, and renders them more pleasant to the taste.

Mineral Waters, Manufacture of.—The manufacture of mineral waters also embraces composition waters devised for special medical purposes, and the beverages soda water, seltzer water, etc. The most important constituent of all these waters is carbonic acid gas, which is prepared by decomposing carbonate of lime and bicarbonate of soda with acids, especially sulphuric acid, in a vessel called the generator. Carbonate of lime contains from 41 to 52 per. cent. of carbonic acid; bicarbonate of soda 47·62 of soda and 52·38 of carbonic acid. Distilled water is used in making mineral waters, pure well or spring water for soda water, etc. Water absorbs nearly its own volume of carbonic acid at 60°, and the absorption is increased by reduction of temperature, increase of pressure, or both.

Genuine soda water should contain about 15 grains of crystallized carbonate of soda in one pint of water. Chloride of sodium is sometimes added. Bicarbonate of soda is sometimes used for generating carbonic acid gas, and from this has arisen the popular use of the name soda water for carbonic acid water, or water charged with an excess of carbonic acid. German and American soda water, or what is called in France *eau de seltz*, contains no soda. Priestley first produced it by pouring dilute sulphuric acid over carbonate of lime, and impregnating the water with this gas—a method which is still generally followed. Under the name of soda, carbonic acid water is mixed with syrups, and it forms a constituent of many of the American compound drinks. In Paris it is taken as *eau gazeuse* with hock and claret. Carbonic acid water improves the taste and

increases the sanitary effect of these drinks, is the best antidote for alcohol, and lessens the desire for spirituous liquor. It has a generally exhilarating and invigorating effect upon the system, essentially promotes digestion, checks too great acidity of the stomach, and is a much-esteemed remedy in febrile diseases.

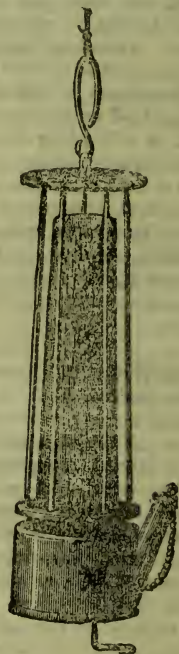
Miners, Dangers Incurred by.

—The health of a miner is exposed to special causes of danger. In addition to the danger of being blown up, or knocked down by falling stones, he is constantly at work in the presence of great masses of materials which generate noxious gases—not to mention the effluvia which arise from his own person, the flame of his candle, and the burning of powder. To this is added, in many cases, an excessive heat, often a steaming, sultry heat, or else a cloud of dust proceeding from the coal or rock under the blows of his pick. And, if we further consider the confined position in which he often works, the excessive exertion, the exposure to draughts, and the total deprivation of sunlight, we shall be ready to admit that his life is an unnatural one and full of singular risks. But man can adapt himself to almost anything. With proper precautions, it is said that the life of a miner is almost as safe, and his health quite as good, as the lives of other classes in general; better, in fact, than those of his own family.

The precautions to be taken relate first and foremost to ventilation.

"Fire-damp" is a name given to light carburetted hydrogen, which is given off abundantly in the carboniferous state and in enormous quantities from the gas-wells of North America. When mixed with seven or eight times its own volume of common air, it is highly explosive. After an explosion, the passages of mines are filled with the irrespirable mixture of nitrogen, carbonic acid, and the vapour of water, resulting from its combustion. To guard against these dangers, various expedients have at different times been tried, the most effectual being the use of the so-called "safety-lamp." Of

this there are several modifications—differing but little in principle, however. It will be sufficient, therefore, if we describe the best known among them, which bears the name of its inventor, Sir Humphrey Davy. This consists of an ordinary oil lamp whose sides, instead of being of glass or any other transparent material, are composed of what is termed wire gauze—that is to say, a kind



DAVY'S SAFETY LAMP.

of tissue woven of very fine iron wire, leaving very minute openings or interstices between its strands. Its general form is cylindrical: and the top and bottom, which are made of iron, are connected by upright rods of the same metal. The air necessary to support the combustion of the flame can enter through the meshes of the wire, and the products of combustion find egress by the same means. The explosive gas may, of

course, in like manner find its way into the interior of the lamp and burn there, but only in such very small quantities as to be unattended with danger; while the flame, being unable to pass through the wire gauze, cannot come into contact with any large volume of the gas. Used with due precaution, this apparatus forms the most efficient safeguard that can be placed in the hands of the miner.

"Choke damp," or "black damp," is a name for carbonic acid, and a common product of most combustions and of respiration. It abounds in badly ventilated mines. Nitrogen is not a poison of itself. Carbonic oxide, however, is one of the most dangerous of poisons, and so is sulphuretted hydrogen when present in any considerable quantity. Both the latter are called "white damp."

The heated flue, as a means of exhausting air from mines, has obvious dangers in coal mines; and its special danger lies in the variations which different atmospheric conditions produce in its working.

The steam fan, driven by a small engine, may be used either for drawing air from the mouth of a mine or for forcing it in through tubes to the places where it is most needed.

Another reason for supplying abundance of fresh air to mines is furnished by the great heat which is found underground. In the mines of Cornwall the temperature is said to increase regularly about one degree Fahrenheit in every fifty feet in the upper parts, and one in every eighty-five feet in the lower parts, and this is, with local exceptions, nearly the rate at which the temperature rises in other mines.

The excessive quantity of coal dust which chokes the air of badly ventilated mines has been previously alluded to as affecting the lungs. But there are other causes of pulmonary trouble, quite obvious in their nature, such as sudden changes from heat to cold, and deliberately sitting down in draughts to cool off after working in high temperatures. On the whole, the principal diseases are miners' asthma, consumption

and rheumatism; and among those who have worked long in badly ventilated places, dyspepsia, tremors, vertigo, and other troubles arising from blood-poisoning.

Besides the already-mentioned sources of accidents, there is the sudden falling in of pieces from the roof of the workings. The following summary, made up from H.M. Inspector's return for ten years, shows the number of lives lost in proportion to the quantity of coal raised:—

Total tons of coal raised in Great Britain for the ten years ending 1872. . .	921,713,633
Total number of lives lost in ditto	10,635
Average tons of coal raised to each life lost . . .	86,262

Miners, Duration of Life in.—

See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Mint.—The botanical name of the common mint or spearmint cultivated in our gardens is *Mentha viridis*. It is employed in different culinary processes, being sometimes boiled with potatoes, especially new potatoes, peas, etc., and then withdrawn. It has an agreeable aromatic flavour. It is valuable as a stomachic and anti-spasmodic, on which account it is generally served at table with pea-soup. For this purpose it is dried and finely powdered.

Mirror-Makers.—See MERCURIAL POISONING.

Miscarriage.—The number of lives that are annually sacrificed by miscarriage alone is very great. There are few women the mothers of several children who have not miscarried at some period of their married life. The necessity for every female becoming intelligently acquainted with those causes of miscarriage over which she herself exercises so much control, will be apparent when it is remembered that after one or two miscarriages a woman is apt to get

into that condition in which it becomes a habit with her to miscarry.

Were it looked upon more seriously, more care would be taken both to prevent its occurrence, and, having once occurred, to do everything to prevent its recurring. It seems difficult to impress upon the female the necessity there is for absolute rest for several days after miscarriage. Many women leave bed a day or two after, and some scarcely think it worth while remaining in bed at all. Need it be said that the majority who thus act live to repent of their folly? Miscarriage is not confined to any one period of pregnancy. It may occur all through; but the time of its most frequent occurrence is generally between the eighth and twelfth week of pregnancy. It has a greater tendency to come on at certain times than others; thus, a woman is more apt to miscarry at the time she would have been poorly if she had not been pregnant, so that at these times she ought to be kept as free from excitement and every disturbing influence as possible.

Miscarriage occurs most frequently towards the close of sexual activity, and perhaps next in frequency in the newly married. Hence the necessity for vigilance on the part of the young female.

Miscarriage, Causes of.—The causes which may produce miscarriage are as follows:—Anything which gives rise to severe mental shock may bring it on—thus, sudden fright, great mental anxiety, anything which taxes the patient's strength severely, such as the lifting of heavy weights, excessive exercise either on foot, on horseback, driving, or on the railway. Falls also act injuriously, and are frequently the exciting cause of a miscarriage. Blows also may produce it.

Any undue excitement may cause it; hence the necessity there is for the young married woman being on her guard. The amount of gaiety to which the newly married female is exposed, and the unnatural mode of life inseparable from it, are fertile sources of miscarriage during the early

months of pregnancy. Luxurious living also predisposes to this.

Scarlet fever, small-pox, and other of the diseases called *exanthematous*, operate as powerful causes in the production of miscarriage. Some women of a naturally delicate constitution are more prone to miscarry than others. The exhibition of strong purgative medicines is very apt to act injuriously upon the pregnant female, and may bring about miscarriage. Their use at this time should therefore be carefully guarded against. Indeed, none but the mildest forms of aperient medicine should be given to the pregnant female. Many substances are employed criminally for the purpose of bringing on miscarriage. Of these, rue, savin, cantliarides, and mustard may be taken as examples; but as they have no direct influence upon the womb itself, they can only act by reason of the irritation to which they give rise; but frequently the unhappy creatures who make use of such means bring about their own destruction—the end they had in view never being attained.

Severe and excessive sickness may bring about miscarriage, as was before mentioned when speaking of the sickness of pregnancy, so that if the natural sickness should be excessive, the pregnant female should at once consult her medical attendant, that means may be employed to keep it in moderation. All emetics during pregnancy are dangerous, being apt to bring about miscarriage. There are other causes which, operating upon the nervous system, give rise to irritation, and if allowed to go on unchecked may ultimately bring about miscarriage. Of this nature are the small threadworms which frequently infest the lower bowel.

Constipation is often a cause of irritation, and if not attended to may at last lead to miscarriage. The irritation also of toothache is occasionally so severe as to threaten the patient with miscarriage. It will be seen from what has just been said that the causes which bring about this condition present a formidable array; but as many

of them are under the patient's own control, much may be done to obviate its occurrence.

Miscarriage, Symptoms of.—

If, in the course of her pregnancy, a woman begins to experience feelings of languor, debility, and general depression, and if in addition to these she experience an uneasy sensation about the thighs, loins, and hips, with pains coming and going, she should be upon her guard, as these, although frequently unsatisfactory symptoms, may be regarded as premonitory of miscarriage. Shortly after, however, if miscarriage is threatened, these symptoms will be succeeded by a discharge of blood. This discharge may be small in quantity, and after lasting for a short time it may pass off to be renewed after the lapse of a brief interval. Instead of a discharge small in quantity, there may be a considerable gush of blood occurring quite unexpectedly. Should the bleeding be succeeded by no aggravation of the pains already referred to as occurring in the loins and hips, there is hope that by proper treatment the threatened miscarriage may be averted; but if, instead, the bleeding be followed by pains increasing in strength, and having more of a bearing-down or expulsive character about them, the probability is that the threatened miscarriage will not pass off, but that the pains will go on increasing in strength until the womb has emptied itself of its contents.

Miscarriage, Treatment of.—

The treatment of this condition naturally divides itself into three parts: 1, That which is necessary prior to the occurrence of miscarriage, and with a view to prevent it; 2, That which must be adopted after it has occurred; and 3, The treatment which it is desirable to pursue after it has occurred with a view to prevent its recurrence.

1. *Prevention of Occurrence.*—If the patient is suffering from weakness, debility, and the other symptoms mentioned above as premonitory of miscarriage, she should immediately go to bed. It is useless at-

tempting to pursue any line of treatment as long as the erect posture is maintained. What is wanted most imperatively is rest in the recumbent position. The head must be kept low; it ought on no account to be propped up with a number of pillows. The patient must be kept cool. She must not be encumbered with bedclothes, only sufficient being put over her to prevent her being chilled. All articles of food and drink must be given nearly cold. The room in which she lies should be well ventilated; and if there is a fire in the apartment, it must not be allowed to overheat the room. The patient should be made to sleep on a mattress, and there should be no curtains about the bed. The diet should consist of milk food; it should be light and nourishing. Sago, arrowroot, tapioca may be given, a lightly boiled egg, a little gruel, toast and water, and the like. No stimulants must be administered. The medical attendant should be sent for without delay, as this is the time when by far the most can be done to prevent the occurrence of a miscarriage. Should it have gone beyond this stage, and should the first thing to attract the attention of the pregnant female be a discharge of blood, the same rules must be observed. Send without delay for the medical attendant, and meanwhile let the recumbent position be maintained. Attend to the rules already laid down in regard to the bed and the ventilation of the room. The diet must be light and as unstimulating as possible. On the arrival of the medical attendant, means will be taken to prevent the occurrence of miscarriage by allaying the uterine contractions, and every direction which he lays down must be rigidly adhered to. Should the discharge of blood be accompanied by pains of a bearing-down or expulsive character, the probability is that the case has proceeded too far, and that miscarriage is inevitable. Should this be so, the patient must be strictly guided in all she does by her medical attendant, who now takes charge of the case.

2. *After-Treatment.*—As was before observed, the occurrence of miscarriage is by

many women regarded as a matter of little or no consequence, and, as might be expected, the after-treatment is often grossly neglected. It is, perhaps, only after the lapse of years that the suffering which this neglect has given rise to causes the truth to dawn upon the mind. When a miscarriage has occurred, as great care is necessary as after a delivery at the full time. If a woman rise a day or two after she has miscarried, especially if it be beyond the third month, the womb, which was increased in size, has no time to regain its normal dimensions, so that when she begins to move about again, the ligaments which maintain it in position are no longer able to support the increased weight thus put upon them; they therefore yield to the excessive strain, and the womb falls down, as it is called, or becomes displaced. When this occurs, it may give rise to trouble at the time; more frequently, however, little present annoyance is experienced, although the foundation of future misery has been assuredly laid. After miscarriage the recumbent position should be maintained for a week or ten days, the diet for the first few days being light and easy of digestion. The room must be kept cool and well ventilated. On leaving bed the patient should be careful to guard against maintaining the erect posture too long at a time. She should for a week or so longer rest upon a sofa or couch for several hours each day.

3. *Prevention of Recurrence.*—When a woman has once been the subject of miscarriage, the question naturally arises, What must she do to prevent it happening again? If it has occurred in a woman who appears to be at the time in an enfeebled state of health, attention must be directed to its improvement before she becomes again pregnant. For this purpose nothing seems to answer so well as change of air. This is a powerful restorative means, and frequently is one of the first things to repair a debilitated constitution. The change should be to some quiet country spot, or to the seaside; if the latter be chosen, fashionable watering-places had better be avoided, and

a place free from bustle and excitement selected. This will frequently do much to restore vital energy and bring back health and vigour to the exhausted frame, but it may not accomplish all; hence the necessity there is in such cases of bringing the patient under medical influence as well. For this purpose a well-directed course of tonic treatment should be begun, and no preparations will be found so useful as those of quinine and iron. These two substances may be had in the form of pills, or combined in the citrate of iron and quinine, of which five grains may be taken in water three times a day.

The diet should also be attended to. It must be light and nourishing. Milk, eggs lightly boiled, and farinaceous substances, such as arrowroot, sago, tapioca, corn-flour, and the like, may be given. Bread, brown or white, may also be eaten, the latter agreeing better when toasted. Animal food may also be taken, but only that which is more easy of digestion, veal, pork, and such like being avoided. All pastry and made dishes, or those which are highly seasoned, must be forbidden for a time. A moderate quantity of tea, coffee, or cocoa may also be taken daily.

The sleeping apartment should be well ventilated. A horse-hair mattress is preferable to sleep upon, and is more conducive to the maintenance of health than a feather bed. There should be no curtains about the bed. The patient should be regular in her hours of sleep, and ought to retire to bed early. Irregular hours, sitting up late at night, and engaging the mind with what is calculated to produce excitement, are fruitful sources of disturbed and restless nights. The mind should be kept as far as possible calm and tranquil, especially before retiring to rest.

A moderate amount of exercise should be taken daily. It is as bad for the patient to remain constantly indoors as it is for her to fatigue herself while taking exercise. The best time for taking exercise is between breakfast and dinner, and that kind of exercise which answers best is walking.

This must never, of course, be carried so far as to fatigue the patient.

The state of the bowels ought also to be attended to, and should be carefully regulated by diet, so far as that is able to do so, and that failing, recourse must be had to the milder laxative medicines, such as castor oil, compound liquorice powder or pills of colocynth and hyoscyamus. No severe purgative medicines are to be made use of; they are quite unnecessary, and are frequently productive of harm. A little Pullna water taken the first thing in the morning will often answer admirably for this purpose.

A remedy, powerful alike in restoring the debilitated constitution and in causing the womb to regain its tone, will be found in baths. In summer the sponge-bath or the shower-bath may be employed and cold water used; in winter the same baths will prove of great service, but tepid water should be employed instead of cold, at least to begin with. Great benefit will be derived from the daily employment of the sitz bath. The water should be slightly tepid.

During the absence in the country and for several months after the occurrence of a miscarriage, the marital relationship should cease. If the woman has miscarried several times, she should be very careful of her health when again pregnant. When she has again become pregnant, she must sleep apart from her husband. This is absolutely necessary to secure her carrying to the full time. She should rest frequently during the day, and the amount of exercise taken must never be such as to produce fatigue. The diet must be plain, nourishing without being stimulating, and all alcoholic beverages must be avoided. The state of the bowels must also be attended to.

When the time at which she formerly miscarried approaches, great care requires to be exercised. She should rest in the recumbent position for several hours daily, and if symptoms of impending miscarriage manifest themselves notwithstanding these precautions, she must at once go to bed and send for medical assistance. At the approach

of each menstrual period, that is to say, at the approach of the times at which she would have been "unwell" had she not been in the family way, the utmost vigilance is necessary. At such times the tendency to miscarry is always greater than at others, hence the necessity for increased precaution. The amount of exercise should now be diminished. The baths may be continued with advantage, with the exception of the shower bath, which is apt to prove too severe at this time.

Mixed Breads.—Rye bread is hard of digestion. It requires longer and slower baking than wheaten bread. It is better when made with leaven of wheaten flour rather than yeast, and turns out lighter. It should not be eaten till two days old. It will keep a long time. A good bread may be made by mixing rye-flour, wheat-flour, and rice-paste in equal proportions; also by mixing rye, wheat, and barley. In Norway it is said that they only bake their barley bread once a year, such is its keeping quality, or, in other words, retention of moisture. This, however, is very doubtful. Indian corn-flour mixed with wheat-flour (half with half) makes a nice bread; but it is not considered very digestible, though it keeps well. Rice cannot be made into bread, nor can potatoes; but one-fourth potato-flour in three-fourths wheaten flour makes a tolerably good loaf.

Mixed Diet, Lankester on.—
See VEGETARIAN DIET.

Mixed Spice.—*See* SPICE, MIXED.

Mixtures (*Lat.* *mixtura*, a mixing together).—The following mixtures are arranged in alphabetical order, partly in reference to the disorders for which they are prescribed, partly in reference to the effects that they produce.

1. *Anæmia*.—Take of tincture of the perchloride of iron, three drachms; glycerine, five drachms; water, an ounce. Give in doses of a teaspoonful in water three times

a day, shortly after food. When, in conjunction with this impoverished state of the blood, the heart's action is weak and, perhaps, irregular, the following mixture may be given with advantage: take of tincture of digitalis, two drachms; tincture of perchloride of iron (steel drops), three drachms; glycerine, half an ounce; water, seven drachms. Mix. A teaspoonful to be taken three times a day in water.

2. *Bronchitis, Chronic*, No. 1.—Take of carbonate of ammonia, a drachm; spirit of ether, an ounce; syrup of squills, two ounces; infusion of senega, to make eight ounces. A tablespoonful to be taken every four hours in half a wineglassful of water.

3. *Bronchitis, Chronic*, No. 2.—Take of sweet spirits of nitre, two drachms; syrup of squills, an ounce; paregoric elixir, an ounce; infusion of senega, to make eight ounces. Take a tablespoonful in a little water, three times a day. This mixture is useful in cases of cough resulting from exposure to cold.

4. *Consumption*.—Take of diluted hydrocyanic acid, half a drachm; diluted nitric acid, three drachms; glycerine, an ounce; infusion of quassia, sufficient to make eight ounces. Dose: a tablespoonful in water every four hours. Useful in the early stage of consumption.

5. *Cough, Chronic and Habitual*.—Take of mixture of gum ammoniac, cinnamon water, of each two ounces and a half; ipecacuanha wine, two drachms; paregoric elixir, half a drachm; syrup of tolu, six drachms. Mix. The dose of this composition is a table-spoonful every four hours, or when the cough is troublesome.

6. *Cough, Recent*.—Take of honey, five ounces; treacle, a quarter of a pound; best vinegar, seven ounces. Mix them, and simmer in a common pipkin over the fire for fifteen minutes. After removing it from the fire, and the mixture has become lukewarm, add two drachms of ipecacuanha wine. The dose is a tablespoonful every four hours for adults.

7. *Debility and Constipation*.—Take of tincture of the perchloride of iron, three

drachms; tincture of nux vomica, two drachms; glycerine, half an ounce; water, seven ounces. Mix. A tablespoonful in half a wineglassful of water every four hours.

8. *Diuretic and Sedative—Steel and Henbane*.—This is useful as a diuretic and sedative in dropsical affections. Take of tincture of the perchloride of iron, three drachms; tincture of henbane, one ounce; water, to make eight ounces. Mix. Dose: a tablespoonful in a wineglassful of barley-water three times a day.

9. *Emetic for Adults*, No. 1.—Take of powdered mustard from one to two teaspoonfuls. Mix in a tumblerful of warm water.

10. *Emetic for Adults*, No. 2.—Take of sulphate of zinc, twenty grains; water, a sufficient quantity. Mix, and give as an emetic, to be followed by copious draughts of tepid water. This is a useful emetic in cases of narcotic poisoning.

11. *Emetic for Children*.—The safest emetic is ipecacuanha wine. It may be given in doses of half a teaspoonful to a teaspoonful, in sweetened water, followed by draughts of tepid water, and repeated every ten minutes till vomiting results.

12. *Tonic for Debility—Steel and Quinine*.—Take of sulphate of quinine, sixteen grains; tincture of perchloride of iron (steel drops), three drachms; infusion of quassia, to make eight ounces. This is a useful tonic in cases of debility, especially when accompanied with an impoverished state of the blood. It is very useful, also, in convalescence from acute diseases, in giving a patient an appetite for food when none exists. The dose is a tablespoonful in a wineglass of water, three times a day before food.

13. *Tonic for Indigestion*, No 1.—Take of compound tincture of cinnamon, two drachms; syrup of orange-peel, two drachms; infusion of columba, five ounces and a half. Mix. The dose is two tablespoonfuls every four hours.

14. *Tonic for Indigestion*, No. 2.—Take of infusion of columba, five ounces and a half; compound tincture of cinnamon, two

drachms; syrup of orange-peel, two drachms. Mix.

15. *Tonic for Indigestion*, No. 3.—Take of bicarbonate of potash, half an ounce; infusion of columba, eight ounces. Mix. A tablespoonful in water three times a day. Useful when the urine is acid and high-coloured.

16. *Tonic, General*.—Take of nitro-hydrochloric acid, three drachms; infusion of gentian, sufficient to make eight ounces. Mix. A tablespoonful in a wineglassful of water three times a day.

17. *Whooping Cough*, No. 1.—Take of tincture of belladonna, one to two minims; bromide of potassium, five grains; camphor water, a drachm. To be taken every four hours. May be given to a child one or two years old.

18. *Whooping Cough*, No. 2.—Take of bromide of potassium, bromide of ammonium, of each, eighty grains; tincture of belladonna, half a drachm; water, to two ounces. Mix, and give a teaspoonful to a child every three hours, in a little water.

Moderate Exercise.—See EXERCISE, MODERATE.

Modified Small-Pox.—See SMALL-POX, MODIFIED.

Moist Tetter.—See ECZEMA.

Molars.—See PERMANENT TEETH.

Monkey's Skull Compared with Man's.—See SKULL, COMPARISON OF MAN'S AND MONKEY'S.

Moral Medicine.—Abernethy's story of his treatment of a patient is a never-to-be-forgotten illustration of the importance of moral medicine in physical disease. A gentleman engaged in duties involving much responsibility and anxiety, consulted Mr. Abernethy for the cure of a string of ailments that rendered him incapable of performing the obligations of his office; he assured the surgeon that to leave town for the sake of health was utterly out

of the question, and that he could not be spared for a day from his engagements. Mr. Abernethy pondered; he knew the doctor who would certainly cure the gentleman, but then he lived in one of the most remote towns of Scotland. The gentleman reflected; and upon such strong assurances of cure from Mr. Abernethy, determined on the sacrifice of quitting his business, and seeking the Scottish *Æsculapius*. He started by mail, full of expectation and hope; business was forgotten; anticipations of cure filled his mind, not unmingled with gratitude towards his adviser. The town was reached, but no physician found; no such house, no such street, no such person known. Enraged at being made the dupe of an eccentric surgeon, he immediately returned to London, thoughts of a very different nature to those which previously engaged him occupying his mind—thoughts so tempestuous that the loss of a week in travelling and expectation were drowned, and with them every consideration of his usual occupation. Arrived in town, he drove with all speed to a well-known house in Bedford Row, and was ushered into the presence of Mr. Abernethy, whom he at once overwhelmed with a storm of indignant expostulation. Mr. Abernethy smiled when a calm was at last restored, and asked after the gout; but the gout and all the other ailments had been forgotten in the excitement of the journey; and the gentleman was bound to acknowledge the wisdom of his adviser. Railroads, unfortunately, put this kind of practice out of the range of possibility at the present day; but they offer in return advantages, which, if properly used, are in reality superior. An hour takes the invalid to a classic and delicious ramble, thirty miles from London, and the same conveyance brings him back to lunch or dinner. We do not lack the opportunities, but the judgment to use them.

Moral Nature, Effect of Music on.—See MUSIC, EFFECT OF, ON HUMAN MIND.

Moral and Physical Thermo-
meter (*Gr. thermos*, hot; *metron*,
measure).—It is worth while to reproduce
here as a curiosity the “Moral Thermo-
meter” of Dr. Lettsom, as given by that
physician in his once-popular tract, “The

Bad Effects of a Little Drop.” In some
respects it is a trifle out of date; however,
alter but a few of the names of the liquors
and two or three of the punishments, and
the reader will find it as instructive now as
it ever was.

A MORAL AND PHYSICAL THERMOMETER;
Or, a Scale of the Progress of Temperance and Intemperance.
LIQUORS WITH THEIR EFFECTS IN THEIR USUAL ORDER.

TEMPERANCE.					
70	WATER.	}	Health, Wealth, Serenity of Mind,		
60	Milk-and-Water.		Reputation, Long Life, and Happiness.		
50	Small Beer.				
40	Cyder and Perry.	}	Cheerfulness, Strength and		
30	Wine.		Nourishment, when taken only at		
20	Porter.		Meals, and in Moderate Quantities.		
10	Strong Beer.				
0	INTEMPERANCE.				
		VICES.	DISEASES.	PUNISH- MENTS.	
10	Punch.	}	Sickness.	}	
20	Toddy and Crank.		Idleness.		Puking, and Tremors of the hands in the morning.
30	{ Grog, and Brandy and Water.		Peevishness.		Bloatedness.
			Quarrelling.		Inflamed eyes.
40	Flip and Shrub.		Fighting.		Red nose and face.
			Lying.		Sore and swelled legs.
50	{ Bitters infsd. in Spirits, Usquebaugh, Hys- teric Water.		Swearing.		Jaundice.
			Obscenity.		Pains in the limbs, and burning in the palms of the hands and soles of the feet.
60	{ Gin, Aniseed, Brandy, Rum and Whiskey in the Morning.		Swindling.		
			Perjury.		Dropsy.
70	{ Do. during the Day and Night.		Burglary.		Epilepsy.
			Murder.		Melancholy.
		Suicide.	Madness.		
			Palsy.		
			Apoplexy.		
			DEATH.		
				Debt.	
				Black eyes.	
				Rags.	
				Hunger.	
				Hospital.	
				Poorhouse.	
				Gaol.	
				Whipping.	
				The Hulks.	
				Botany Bay	
				GALLOWS,	

Morning Sickness.—On getting up in the morning from the recumbent position, most pregnant women suffer from a certain degree of nausea or even sickness. The period when this symptom manifests itself is generally a few weeks after the occurrence of conception. It may, however, appear earlier, in some cases coming immediately after the woman has conceived, or its appearance may be delayed till the last few weeks of pregnancy. It may also last throughout the whole period of pregnancy. This morning sickness is due to the sympathy which exists between the stomach and the womb, and is entirely reflex in its nature.

Mother, Treatment of, after Delivery.—This resolves itself into the consideration of the rest that should be taken for some time after the birth of a child, and the most suitable diet during the period of rest.—See therefore **DIET AFTER DELIVERY**; **MOTHER, TREATMENT OF, AFTER LABOUR**; and **REST AFTER DELIVERY**.

Mother, Treatment of, after Labour.—On the removal of the after-birth, the mother ought to be allowed to remain just as she is for about an hour, after which time the immediate risk of bleeding will be in great measure over, and the soiled linen can then be taken away. Should any attempt be made to do this immediately after the expulsion of the after-birth, it may be attended with severe hæmorrhage, and even cost the patient her life.

An hour having elapsed, the draw-sheet should be removed along with the soiled garments. This must be done with as little disturbance to the patient as possible, and when the removal of the soiled articles is completed, the clean chemise—which, if previous injunctions have been followed, will be folded up under the armpits—should now be brought down.

After this a warm napkin should be placed to the external parts, or, preferably, placed not in immediate contact with the parts, but under the hips, laid flat out. A clean

sheet, well aired, should now be placed under the patient, and the binder applied. Perhaps the best kind of binder is one made of unbleached calico, about a yard and a half long and eighteen inches deep, with the upper part cut away so as to render the top narrower than the bottom, which enables it to be applied more regularly, and if made slightly narrower immediately above the lower edge than a few inches above it, will the better maintain its position.

The binder ought always to be made so that it will extend below the fulness of the hips, and embrace the upper part of the thighs. It must not be applied too tightly, as is sometimes done—a moderately firm support being all that is required. It was formerly the custom to place some more solid article, such as a book, a pincushion, or a folded towel under the binder and over the womb, to compress it, and so prevent flooding. Such things had, however, better not be introduced, as they are apt to interfere with the proper contractions of the womb, and so prove obnoxious.

While the binder is being applied, and, indeed, while everything is being done to the patient at this time, she must be kept as passive as possible. The fewer the efforts she makes on her own behalf, the better. The most serious risk of dangerous hæmorrhage, or even of immediate death, is sometimes incurred by women raising themselves to the sitting posture at this time, and they cannot be too strongly impressed with the necessity there is for them remaining both recumbent and passive.

All necessary changes having been accomplished, the patient should now be raised a little higher in bed, and for this purpose two assistants will be required. They should stand one at each side of the bed, and draw the patient carefully up. The bed-clothes should now also be arranged about the patient, and if she feel chill, some extra covering may be required, and a petticoat, warmed before the fire, may be wrapped round her feet. She must, on no account, be overburdened with bedclothes, as too great heat at this time may act injuriously

upon her. The changing of the patient being now finished, and everything about the bed being arranged comfortably, she may be given something to eat.

The best thing to give her at this time will be a cupful of tea and milk, about equal parts, or some milk and bread. If preferred, a little beef-tea may be given instead. No stimulants of any kind must be offered to the patient, unless they have been specially ordered by the medical attendant. When the patient has had something to eat, the room should be rendered perfectly quiet, and she should be induced to sleep.

Mouth.—The mouth may be broadly spoken of as an irregular cavity that contains the organs of taste and mastication. It is not only the most expressive and characteristic, but it is also the most important of all the features. No other portion of the human organism is of such complex structure, and no other has such diversified functions to perform. The mouth is the organ of taste, of speech, of song, of mastication, and of insalivation; it is the avenue for the entrance of the food and drink essential to life, and the channel through which passes much of the air which is inhaled, as well as that which is expired. The same membrane which lines its cavity is continued throughout the nose, the throat, the stomach, and the intestinal canal; throughout the larynx, the windpipe, the bronchial tubes, and the lungs. It is thus closely related to the functions of digestion and respiration, while by open passages direct communication is maintained with the eyes, ears, and nose, and by the nerves, with which it is abundantly supplied, with every part of the body.

The mouth is made up of the lips, cheeks, upper and lower jaws, with their alveolar processes; the hard and the soft palate, the tongue, salivary and mucous glands, mucous membrane, gums, and teeth. It is a wonderful combination of bones, muscles, arteries, veins, nerves, glands, membranes, and a curious structure of hard and soft tissues constituting the teeth. These, like all other

parts of the body, depend upon the general system for their development and nourishment.

Mouth, Hygiene of tho.— See HYGIENE OF THE MOUTH.

Mucous Glands (*Lat. mucus*, discharge from nose; glands, glandis, an acorn).—These are a numerous class. They are very small, consisting of little bags formed by a peculiar membrane, and opened by minute *ducts*, through which they discharge their contents. They are distributed upon the mucous membrane of the tongue and that which lines the nose, windpipe, stomach, intestines, and bladder, furnishing a peculiar kind of fluid called *mucus*, with which those parts are lubricated.

Mucous Membrane (*Lat. membrana*, film or skin).—This membrane lines the nose, mouth, throat, air-passage of the lungs, stomach, intestines, and other free passages of the body. In the stomach and intestines it is thrown into folds, which increase the extent of its surface and prevent the food from hurrying through the alimentary canal with too much rapidity. It is soft, velvet-like in appearance, and is of a pale-pink colour when in health, but red when inflamed. It secretes a peculiar fluid of a slimy nature which is called *mucus*. Blood frequently exudes from this membrane, constituting *hæmorrhage*, which may take place from the lungs, stomach, or any other part which it lines. A false membrane sometimes forms upon its surface, which in croup is coughed up from the windpipe, and in other diseases, as dysentery, is discharged from the bowels. This membrane, though ever so much inflamed, never forms adhesions. If it did, the intestines, windpipe, throat, and other free passages might become closed up, when death would be the inevitable consequence.

Mucous Membrane of Nose, etc.—The mucous membrane of the nasal passages, and of the windpipe, is provided

with minute brush or hair-like processes, visible only under the microscope, which are continually waving towards the exterior of the body, and which thus assist in washing out any excess of mucus, or particles of dust, which have been inhaled into the nose or windpipe. In certain affections these little hair-like appendages (*cilia*) are destroyed, without being reproduced, as they are in a healthy state, and then there is some difficulty in getting rid naturally of the products alluded to in the last sentence, giving rise to more or less painful voluntary efforts of hawking, hemming, and coughing to eject them. Besides this, the delicate mucous membrane is exposed to the irritation of the air, and thus becomes further and further diseased, sometimes leading to the formation of real sores or ulcers.

Mucous Membrane of Throat.

—All the structures of the throat are lined, or covered, rather, with mucous membrane, containing numerous little glands, which secrete a bland, lubricating fluid, which keeps the parts moist, pliable, and comfortable. When this fluid is deficient, the parts become dry and uncomfortable; and when it is in excess, it becomes mingled with little cast-off scales, similar to those shed off by the skin, as observed in the water after a bath, forming thick, tenacious masses of mucus, which irritate the parts, and give rise to cough to get rid of them.

Mulberry.—This fruit has a pleasant, salubrious taste, and contains a mucilaginous and nourishing juice. It is also cooling and laxative; but if eaten too freely is apt to induce a tendency to looseness of the bowels.

There are two sorts of the mulberry, the white and the black, though the latter is most commonly grown.

Mumps.—This disease, which is so called because it hurts to speak, is inflammation of the parotid and submaxillary glands; it is a painful, but ordinarily not dangerous thing, attacking young persons

chiefly, but rarely occurring in children under one year of age. It is infectious, and sometimes epidemic.

Mumps, Symptoms of.—There may be for several days a languid feeling and severe headache, and the trouble is recognised later by the pain under one ear, which is worse on opening the mouth or chewing: a swelling is formed in the parotid gland, just under the ear, which gradually pushes out the lobe of the ear, and is soft and doughy. It may appear on one side only, or on both in turn. At its height the patient can hardly move the jaw or speak. There is some fever with the disease, but in from two to five days all the symptoms subside.

Mumps, Treatment of.—There is little to do beyond keeping the patient in his room, and regulating the bowels and digestion. Cover the swelling with wool wadding. Let the food be light and easily eaten articles—broths, gruels, eggs, and other soft things. Take no one's advice except the doctor's. Send for him because of complications which may arise. If the swelling is hard and pulsating, the doctor should always be consulted, as the ear may be involved and the hearing impaired.

Muscle, Condition of, in Life and Death (*Lat. musculus*, little mouse or muscle, from mouse-like movement under the skin).—Huxley says that "muscle is a highly elastic substance. It contains a large amount of water, almost as much as the blood, and during life has a clear and semi-transparent aspect. When subjected to pressure in the perfectly fresh state, and after due precautions have been taken to remove all the contained blood, *striated* muscle yields a fluid which undergoes spontaneous coagulation at ordinary temperatures. At a longer or shorter time after death this coagulation takes place within the muscles themselves. They become more or less opaque, and, losing their previous elasticity, set into hard rigid masses, which

retain the form which they possess when the coagulation commences. Hence the limbs become fixed in the position in which death found them, and the body passes into the condition of what is termed the 'death-stiffening,' or *rigor mortis*.

"After the lapse of a certain time the coagulated matter liquefies and the muscles pass into a loose and flaccid condition, which marks the commencement of putrefaction. It has been observed that the sooner *rigor mortis* sets in, the sooner it is over; and the later it commences, the longer it lasts. The greater the amount of muscular exertion, and consequent exhaustion, before death, the sooner *rigor mortis* sets in."

Muscle, Defined.—The muscles constitute that portion of the body which we call flesh, and are the proper name for what is known as *lean meat*. Instead of being in one solid continuous mass, as might be supposed from its external appearance, the flesh of the body is found to be composed of a vast number of separate pieces or strips, of various lengths and shapes, but seldom more than half an inch in thickness, each enveloped in a thin transparent membrane, and the whole arranged in layers one above another, giving to the body bulk, form, and symmetry. These are called muscles, and by their contraction and relaxation produce the various motions of which the body is capable. The human body contains over five hundred of these muscles, the greater number of them being arranged in pairs.

In structure a muscle is composed of small bundles of fibres called *fasciculi*, and each of these fibres is composed again of filaments or threads. These bundles are enveloped in thin cellular tissue or membrane, and the whole put together to constitute a muscle.

Upon the arms and legs the muscles are situated around the bones, and serve to invest and defend them, while they also form to some of the joints their principal protection. Upon the trunk they are spread out to enclose cavities, and form a defensive

wall which yields to internal pressure and the expansion of the body.

The oblique abdominal muscles terminate in a broad, pearl-coloured fascia, or aponeurosis, which completely covers the front or middle portion of the abdomen; while the dorsal muscles, or muscles of the back, blend into one mass of tendon below which expands and attaches to the sacrum and back part of the iliac crest or hip bones. On the wrists and ankles the long tendons of the muscles are closely and firmly bound down by strong bands called the *annular ligaments*.

Notwithstanding their great number, the muscles all have names—Latin names. These names generally have reference in their meaning to the character or use of the muscles to which they are applied, so that those familiar with Latin, on hearing the name of a muscle, immediately know something of its general character, situation, and use.

The accompanying figures will give an idea—as well as can be done on paper—of the character, shape, and appearance of the muscles. They exhibit only the superficial, or outside, muscles, such as would be seen on removing the skin from the body. Underneath them are one or two, and, in some places, several layers of other muscles. Such as can be seen in the figures are indicated by letters, and their names are as follows: *a* (Fig. 1), occipital portion of the occipito-frontalis muscle; *a* (Fig. 2) frontal portion of the same muscle; *b*, the muscles of the cheek; *c*, the sterno-cleido-mastoid muscle; *d*, the trapezius; *e*, the pectoralis major; *f*, the latissimus dorsi; *g*, the external oblique muscle of the abdomen; *h*, the gluteus maximus; *k*, the deltoid; *l*, muscles on the posterior aspect of the upper arm; *l'*, muscles on the anterior aspect of the upper arm; *m*, muscles on posterior aspect of forearm; *m'*, muscles on anterior aspect; *n'*, muscles of the ball of the thumb; *o*, muscles of the thigh; *p*, muscles of the front of the leg; *q*, muscles of the calf; *r*, the tendon Achilles; *s*, the muscles on the upper surface of the foot.

Muscles, Classification of, According to Action.—Those muscles by which a limb is bent are called *flexors* (*Lat. flexus*, bent; from *flecto*, I bend), and

recession, and the extensors in another, so that by their alternate contraction and relaxation, two distinct and opposite motions are produced.

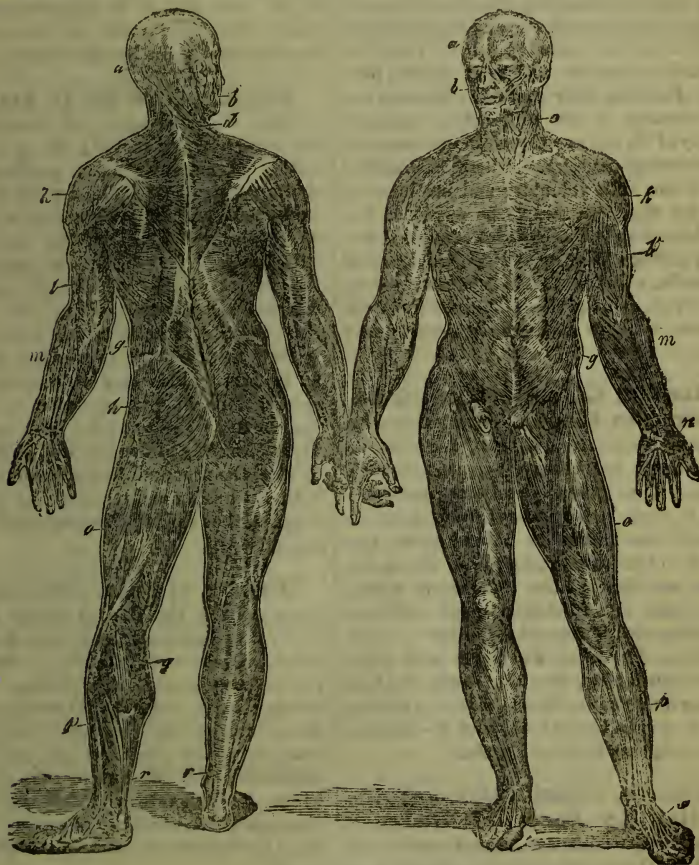


FIG. 1.—MUSCLES VIEWED FROM BEHIND.

FIG. 2.—MUSCLES VIEWED FROM BEFORE.

those by which it is straightened *extensors* (*Lat. extensus*, stretched out; from *ex*, from; *tendo*, I stretch). These two sets of muscles are said to antagonize each other; that is, the flexors pull in one di-

Muscles, Classification of, According to Control.—The muscles are also classified under the two heads of *voluntary* and *involuntary*. The first are such as are under the control of the will, and

enable us to walk, run, leap, and perform any other voluntary act. The *involuntary* muscles, on the other hand, are those over which the will has no influence. The heart is a muscular organ, acting with tremendous force in propelling the blood through arteries; the stomach also and the intestines have muscular coats by which they are enabled to contract and relax for the purpose of moving their contents; yet they are uncontrolled by the will, acting independently of it, and are therefore denominated *involuntary* muscles. There are others which are both voluntary and involuntary, and are therefore said to be mixed, as the diaphragm and other muscles of respiration. They perform their regular functions, asleep or awake, whether we will it or not: yet we can, by an effort of the will, cause them for the time being to act faster or slower, as we please.

Muscles, Classification of, According to Fibres.—Muscles may be arranged into several classes, according to their shape and the arrangement of their fibres. Some are completely longitudinal—that is, long and spindle-shaped, each extremity terminating in a tendon, as the muscles of the arms and legs; in others the fibres are disposed like the rays of a fan, converging to a tendinous point, and constituting what is termed a *radiate* or broad muscle. Again, we find some with their fibres converging, like the small feathers upon a quill or pen, to one side of a tendon—or it may be to both sides of it—running the whole length of the muscle.

Muscles, Classification of, According to Parts of Body.—In conformity with the general division of the body the muscles may be arranged into four parts:—1. Those of the head and neck. 2. Those of the trunk. 3. Those of the upper extremities. 4. Those of the lower extremities. In their distribution they may be said to form two layers, a superficial and a deep-seated one. In some places, however, there are more than this. On the

back, for instance, the muscles are arranged in six layers, one above the other, in order to produce the various and complicated movements of the back, neck, arms, chest, and abdomen. All the various movements of the body and of its different parts are produced by the muscles, the bones serving in most cases as the levers of motion.

Muscles, How Set in Action.—Muscles are acted upon and controlled by the nerves. Contractility is an inherent quality of muscular fibre, enabling it to shorten its substance like a piece of india-rubber when the proper stimulus is applied, and again relaxing when the stimulus is withdrawn. This stimulus is supplied by the nerves. The velocity of muscular contraction, or the rapidity with which the voluntary muscles may be made to act, is truly astonishing. It is often as quick as thought. This may be seen in rapid speaking, or in playing upon a musical instrument. Persons have been known to utter distinctly fifteen hundred letters in a minute, the pronunciation of each requiring both contraction and relaxation of the same muscles, thus making three thousand actions in a minute.

Muscles of Skin.—With regard to the muscles of the skin, in certain animals a very abundant muscular layer is developed immediately beneath the skin, so that they possess the power of wrinkling it and shaking it, in order to rid themselves of dust, insects, etc. In man this is only found in a few situations and moderately developed; but the human skin possesses within its structure a certain amount of muscular fibres which are of especial importance in the present study of the sebaceous glands.

These muscles in the skin belong to the class of what is called smooth or unstriated muscles, which differ from those composing the mass of muscles of the limbs, etc., in that they are not controlled by the will; they are therefore called involuntary muscular fibres. They are, of course, extremely

small, but are quite readily seen by the microscope. They extend from near the end or deeper portion of each hair follicle, in a slanting direction, and terminate, or are inserted, near the outer surface of the corium or true skin.

Muscles of Skin, Action of, on Hair.

—The name given to the muscles is *erector pili* (raiser of a hair) or in the plural *erectores pilorum* (raisers of hairs), so called because when they contract they cause the hair to stand more or less erect, and to protrude a little from the skin; thus, in the cat, when excited or enraged, all the hairs become erect and bristling. The action of these muscles may be well observed in man in what is called "goose skin," when, from exposure to cold, or sometimes from emotional causes, the skin may be observed to be thrown into numerous projections. This condition may be readily observed on entering a warm bath; if the portion not immersed get a little chilled, and if the surface be yet dry, the fine hair on the arm may be seen to rise and stand more or less erect, and as the condition subsides the mass of hairs sink to their former position altogether. This may be repeated several times, all rising and falling together, like a field of grain under the wind.

It was to this action that Shakespeare referred in the utterance of the Ghost to Hamlet:—

"I could a tale unfold, whose lightest word
Would harrow up thy soul; freeze thy young
blood;

Make thy two eyes, like stars, start from their
spheres:

Thy knotted and combinèd locks to part,
And each particular hair to stand on end,
Like quills upon the fretful porcupine."

Muscles of Skin, Action of, on Sebaceous Glands.

—But these muscles have another action which is very important, and that is the emptying of the sebaceous glands. These latter structures have no muscular coat of their own, and their secretion, which is constant, oozes out

upon the surface. Now, where there are large hairs, as upon the scalp and beard, these muscles more or less embrace the sebaceous glands, and by their contraction they empty them from time to time and by this means prevent an accumulation, or prevent the openings from becoming clogged.

Muscles of Skin, Weakness of, a Cause of Acne.—See ACNE, A COMMON CAUSE OF.

Muscles, Strength of. — See STRENGTH OF MUSCLES.

Muscles, their Uses and Action.

—To understand the uses of the various muscles, the reader has only to bear in mind that the object of muscular contraction is simply to bring the two ends of the muscle, and the parts to which they are attached, nearer to each other—the more movable being always carried towards the more fixed point. Thus, when the *sternomastoid* muscle contracts, its extremities approximate, and the head, being the movable point, is pulled down and turned to one side. This may be easily seen in the living subject, the muscle being not less conspicuous than beautiful in its outline. Again, when the powerful *rectus*, or *straight*, muscle on the front of the thigh contracts with force, as in the act of kicking, its lower end, attached to the knee pan and leg, tends to approximate the upper, or more fixed, point, and pulls the leg strongly forward. This occurs also in walking. But when the *sartorius*, or tailors', muscle is put in action, its course being oblique, the movement of the leg is no longer in a straight line, but in a cross direction, like that in which tailors sit: and hence the name *sartorius*.

Another variety of effect occurs when, as in the *rectus*, or straight, muscle of the belly, sometimes one end and sometimes both are the fixed points. When the lower end is fixed, the muscle bends the body forward, and pulls down the bones of the chest. When, as more rarely happens, the

lower end is the movable point, the effect is to bring forward and raise the pelvis and inferior extremities; and, when both ends are rendered immovable, the contraction of the muscle tends to compress and diminish the size of the cavity of the belly, and thus not only assists the natural evacuations, but co-operates in the function of respiration.

In contemplating this arrangement, it is impossible not to be struck with the consummate skill with which every act of every organ is turned to account. When the chest is expanded by a full inspiration, the bowels are pushed downwards and forwards to make way for the lungs: when the air is again expelled, and the cavity of the chest diminished, the very muscles which effect this by pulling down the ribs, contract upon the bowels also—pushing them upwards and inwards, as can be plainly perceived by any one who attends to his own breathing. By this contrivance a gentle and constant impulse is given to the stomach and bowels, which is of great importance to them in contributing to digestion and in propelling their contents; and one cause of the costiveness with which sedentary people are so habitually annoyed is the diminution of this natural motion in consequence of bodily inactivity.

To effect motion the co-operation is required of both nerves—of which we shall speak in a little time—and muscles. Excess of action is followed by results peculiar to itself. If the nerves predominate, either constitutionally or from over-exercise—as they are apt to do in highly nervous temperaments—their excessive irritability renders them liable to be unduly excited by ordinary stimuli; and hence, as in hysteric and nervous women, a proneness to sudden starts, cramps, and convulsions, from causes which would scarcely affect an individual differently constituted. Such persons have little muscular power except under excitement; they then become capable of great efforts of short duration, but sink proportionately low when the stimulus is past. If, on the other hand, the muscles predominate, as in athletic, strong-built men, the

nervous system is generally dull and little susceptible of excitement, and the muscles which it animates are consequently little prone to the rapid and vivacious action that accompanies the predominance of the nervous functions. Great strength and capacity of bodily labour are then the characteristics.

Great muscular power and intense nervous action are rarely conjoined in the same individual; but when they do happen to meet, they constitute a perfect genius for muscular exertion, and enable their possessor to perform feats of strength and agility which appear marvellous to those who are deficient in either condition. The most successful wrestlers and gladiators among the ancients seem to have owed their superiority chiefly to the possession of both endowments in a high degree; and among the moderns, the most remarkable combination of the two qualities is exhibited by some of our harlequins, clowns, rope-dancers, and equestrian performers, and also by those who display their strength and power of equilibrium in balancing wheels, ladders, or other heavy bodies, on the chin; and whose performances require, from the small muscles of the jaw and neck, a force of contraction which, when reduced to calculation, almost exceeds belief. Some modern performers have combined both conditions in a high degree.

Muscular and Mental Activity.

—See MENTAL AND MUSCULAR ACTIVITY.

Muscular Exercise, Robertson

ON.—Says Robertson in his valuable work, "On Diet and Regimen": "Muscular exercise is a direct source of pleasure to every one not suffering from diseased action. Every one must have felt this. The effect of using the muscles of voluntary motion, when all the processes of the economy are being justly and healthily performed, is to impart a marked and grateful stimulus to the sentient nerves of the part, and a corresponding and grateful stimulus to the nervous system generally, sufficiently noticeable by the mind when studious of its

analysis, and always ministering indirectly to the happiness of the individual, colouring and brightening the thoughts and feelings. So much is this believed to be the case by some, that it has been asserted a man may use his limbs too much to leave him in the enjoyment of his fullest capability of pure and abstract thought, and to the extent of making him unduly imaginative. Although this may well be matter of doubt, the fact, and its wise and benevolent intention, remain unaffected: that man derives an immediate pleasurable sensation from using his voluntary muscles, which not only gives to labour a zest, and even to monotonous movements some degree of enjoyment, but produces a reaction on the mind itself, embellishing a life of virtuous toil with a degree of physical enjoyment, and mental energy, buoyancy, and hopeful lightheartedness, that can never be afforded in a like degree to the drones—the mere *fruges consumere nati*—of the human hive.”

Muscular Power, Essentials to.

—Life and the nervous system are essential to muscular power. Separated from the body, and deprived of both, the muscle which formerly contracted with a power equal to a hundred pounds would be torn asunder by a weight of ten. This fact is of itself sufficient to give a tolerable notion of the extent to which muscular contraction depends on other causes than the mere structure of the fleshy fibres; for that structure remains unaltered for some time after death, and after the nervous communication has been suspended—and yet how feeble is the power of resistance which the muscle then possesses!

The required movement having been once effected, by the nervous impulse stimulating the muscular fibre to contraction, relaxation speedily follows, and is, in its turn, succeeded by a fresh contraction proportioned to the object in view. *Muscular action, therefore, consists properly in alternate contraction and relaxation of the fleshy fibres.* A state of permanent contraction is both unnatural and impossible; and,

accordingly, the most fatiguing muscular employment to which a man can be subjected is that of remaining immovable in any given attitude. To an unreflecting person it may seem a very easy and pleasant service to stand for half a day in the attitude of an Apollo or a gladiator, as a model to a statuary; but on trying it, he will find to his astonishment that stone-breaking or the treadmill is a pastime in comparison: in the one case, the muscles which preserve the attitude are kept constantly on the strain, while in the other they enjoy that play and variety of motion for which they were destined by nature. We may easily put the fact to the test by attempting to hold the arm extended at a right angle to the body for the short space of ten minutes. He whose muscles, if indeed capable of that exertion, do not feel sore with fatigue at the end of the time may think himself peculiarly fortunate in being blessed with a powerful constitution.

The principle just stated explains very obviously the weariness, debility, and injury to health which invariably follow forced confinement to one position or to one limited variety of movement, as is often witnessed in the training of young girls. Alternate contraction and relaxation, or, in other words, exercise of the muscles which support the trunk of the body, are the only means which, according to the Creator's laws, are conducive to muscular development, and by which bodily strength and vigour can be secured.

Muscular Power, Failure of, a Sign of Old Age.—

The failure of muscular power, directly dependent upon the want of complete renewal of all the muscular fibres which go to make up the muscles in the shrunken and shrivelled limbs of old age, is another very common milestone upon the declivity of life. Mournful as it is to see the former athlete shorn of his long-boasted strength, this deprivation would have but little direct effect in hindering the attainment of long life were it confined to the muscles under the control

of the will alone. Unfortunately, however, the same loss of muscular tissue, and therefore of muscular power, takes place in the involuntary muscles, and occurring consequently in the heart and the semi-voluntary muscles which inflate the lungs by expanding the chest, renders the vital functions of the respiration and of the circulation of the blood feeble and imperfectly performed. Of course we have no means of examining the heart, for example, and seeing whether in any particular individual the waste has begun, but we possess, under certain limitations, a very sure guide to its existence in the manifestly greater difficulties of breathing, in attempting to run, climb a hill, or even a high staircase, so common among persons over sixty, and almost universal among those over seventy-five years of age.

Another result of feebleness of the heart and muscular-coated arteries is the coldness of the hands, feet, and limbs, due to the slowness and imperfection of the circulation of the blood, which wanders lazily along through its vessels with a torpor in painful contrast to the bounding pulses of vigorous youth. This torpor of the vital current leads to a kind of chilliness of the extremities of aged people, which no amount of outside wrappings will remedy; for, like King David of old, though covered with clothes, they get no heat. Artificial warmth is, therefore, absolutely necessary; and, in extremely cold weather, elderly people, in whom this symptom is at all marked, should remain indoors, and within the influence of well-regulated fires. Many an otherwise long life is cut off at three-score, or three-score and ten, by an attack of bronchitis, lung-fever, or inflammation of the membranes of the heart, etc., from want of knowledge, or want of care, in regard to the necessity of this precaution.

Still another dangerous effect of this muscular wasting (or senile atrophy, as physicians call it), characteristic of old age, is the weakening of the natural worm-like movements of the intestines, accomplished by millions of little involuntary muscles, which, during vigorous age, propel the food

at a proper rate through the alimentary canal, but after the age of fifty or sixty lose some of their efficiency, and as a consequence permit to be set up that torpor or constipation of the bowels which is so common, so troublesome, and so injurious in advanced life.

The management of these various failures in the different muscular organs of the body to do their proper share of work is as simple as it is practically difficult for most persons to carry out. An individual in whom they have occurred is exactly in the condition of a wealthy man whose fortune has been diminished by hard times, until he finds he must either reduce his expenses or trench upon his capital. If elderly people, whose allowance (or income) of muscular strength has been reduced by the "hard times" of three-score and ten to one half of its amount during the prime of life, can only be persuaded to live within the bounds of this diminished income, existence may generally be prolonged for a considerable additional period; but if, on the contrary, they will persist in endeavouring to perform the feats of agility, of strength, of endurance, and of digestion, which were the pride of their youth and their prime, their bodily capital is treasured upon, their remaining stock of vigour, which, prudently husbanded, might well have lasted another twenty years, is soon exhausted, and speedy death is the result.

The use of laxative food, injections, and mild purgatives cannot be too strongly recommended in constipation, and their special importance in avoiding torpor of the bowels in the aged cannot be too strongly urged. Congestion and secondary affections of the liver, blind or bleeding piles and vertigo, or even apoplexy, during the act of straining at stool, are some of the penalties paid by old age for neglect of these safeguards.

Muscular Sense.—The consciousness possessed by both man and animals of the state of the muscles—the muscular sense, as it might be called—is of great importance. It is necessarily by information thence de-

rived that every subsequent exertion is directed and apportioned in intensity to the effort required to be made. If we had no such sense, the delicate and well-directed touches of the engraver, painter, and sculptor, or of the ingenious mechanic, would be at the mercy of hazard; and a single disproportioned movement might ruin the successful labours of months, supposing success to be in reality compatible with chance. Without this sense, man could not deliberately proportion the muscular efforts to his real wants; and even in walking his gait would be unsteady and insecure, because there would be no harmony between effort and resistance. The loss of equilibrium and the concussion and disturbance of the system consequent on taking a false step, as it is called, are a specimen of what we should always be subject to without the guidance of the muscular sense. When we imagine we have one step more of a stair to descend than really exists, we are placed nearly in the same circumstances as if we had no muscular sense to direct the extent of our intended movement; because, misled by an erroneous impression, we make an effort grievously unsuited to the occasion; and yet so habitually are we protected from this error by the assistance of the sense alluded to, and so little are we conscious of its operation, that it is only after mature reflection that we perceive the necessity of its existence.

In chewing our food, in turning the eye towards an object looked at, in raising the hand to the mouth, and, in fact, in every variety of muscular movement which we perform, we are guided by the muscular sense in proportioning the effort to the resistance to be overcome; and where this harmony is destroyed by disease, the extent of the service rendered us becomes more apparent. The shake of the arm and hand which we see in drunkards, and their consequent incapability of carrying the morsel directly to the mouth, are examples of what would be of daily occurrence unless we were directed and assisted by a muscular sense.

Mushrooms (*Fr. mousseron*, from *mousse*, moss).—There are many species of *Agaricus* known under the common name of mushroom, but few which are usually eaten; and although much has been written and said to prove that many more may be safely used as food, such experiments are better left to those who are botanically acquainted with the peculiar structure of each species, for at times many serious accidents have occurred to unskilful judges who have eaten poisonous mushrooms instead of those which are really edible. The common mushroom of Great Britain, *Agaricus campestris*, is readily known by its fragrant odour, which is its chief characteristic, and the absence of which is very suspicious. When in a very young state, it resembles little snow-white balls which are called buttons; afterwards it acquires a stalk, separates its cap, and becomes shortly conical, with liver-coloured gills, and a white, thick, fleshy cap, marked with a few particles of grey. At a more advanced age the cap is concave, the colour grey, and the gills black; in this state it is called a flap. This mushroom, which is almost the only one ordinarily eaten in Great Britain, is included in the few species which are daily gathered and thrown away into the Tiber, at Rome. This prejudice may possibly have arisen from the fact that one of the Roman Emperors was poisoned when eating this mushroom, not owing to its own nature, but from poison introduced into the dish. Ketchup, which is a popular and not unwholesome condiment, is made from mushrooms, and is the basis of most of the numerous sauces which are in common use as additions to cookery. There are many other British species of mushroom besides *Agaricus campestris*, several of which are said to be eatable. The fairy-ring mushroom, *Agaricus pratensis*, is recommended by Dr. Badham in his Book on "Esculent Fungi" as good to eat dried, powdered, and mixed with sauces. As a rule the coloured varieties of mushroom and such as have a milky juice are unfit for food. Mushrooms are highly nitrogenous; they also contain many fat-producing elements.

Music and Noise (*Lat. musica; Gr. mousika techne*, art of music).—When these sound-waves occur with regular and even intervals between them, we call such sounds musical; but when they occur in great irregularity, they produce discord, or *noise*.—See PHYSICS AND PHYSIOLOGY OF HEARING.

Music, Effect of, on Human Mind.—"The effect of music on the human mind," says Dr. Moore, "is influenced by association and memory. Delicacy of perception, a kind of intuitive appreciation of tones and vocal expression, distinguish those who are gifted with musical genius, and they are liable to be possessed by the spirit of harmony to such a degree as to be entranced in a rapturous delirium more dreamy than the visions of an opium-eater. This rapture is a kind of abstraction, which those only know whose hearts are exquisitely sensitive, whose affections have been tried in fire, whose intellect has been expanded and sublimed by sympathy with suffering, and whose spiritual faith has grown mighty in the struggle after satisfaction. They seem to listen until they hear voices uttering the language of a higher sphere; they catch the calm ecstasies of heaven, and they look abroad upon the universe as if, like the suns of the morning, they saw a new creation evoked from darkness into the harmony of light by the breath of Deity."

Music, Effect of, on Moral Nature.—The effect of music on the moral nature can scarcely be more fully expressed than in the words of good old Bishop Beveridge, who thus speaks of the influence of music on himself:—"It calls in my spirits, composes my thoughts, delights my ear, recreates my mind, and so not only fits me for after business, but fills my heart, at the present, with pure and useful thoughts; so that when the music sounds the sweetest in my ears, truth commonly flows the clearest in my mind, and hence it is that I find my soul is become more har-

monious by being accustomed so much to harmony."

Music for Medicine.—A story is related of Farinelli, the famous singer, who was sent for to Madrid, to try the effect of his magical voice on the King of Spain. His Majesty was absorbed in the profoundest melancholy; nothing could raise an emotion in him; he lived in a state of total oblivion of life; he sat in a darkened chamber, entirely given up to the most distressing kind of madness. The physicians at first ordered Farinelli to sing in an outer room; and for the first day or two this was done, without producing any effect upon the royal patient. At length it was observed that the king, awakening from his stupor, seemed to listen; on the next day tears were seen starting from his eyes; the day after he ordered the door of his chamber to be left open. At length the perturbed spirit entirely left our modern Saul, and the medicinal voice of Farinelli effected what no other medicine could do. For mental ailments music is the most certain cure we know, and happy indeed is he who has a turn for this divine medicinal art.

Mussels.—Mussels, it is well known, sometimes produce a species of rash and other unpleasant symptoms. It has been stated that this depends upon a certain part of the mussel, and that when this part is taken out there is no fear of bad effects arising.

"The mussel," says Dr. Paris, "is a species of bivalve, which is more solid, and equally as indigestible, as any animal of the same tribe. The common people consider them as poisonous, and in eating them take out a part in which they suppose the poison principally to reside. This is a dark part, which is the heart, and is quite innocuous; the fact, however, is sufficient to prove that this species of bivalve has been known to kill, but not more frequently perhaps than any other indigestible substance."

Mustard.—Mustard is less stimulating

than the spices, and is therefore employed with greater safety as a condiment in temperate and cold climates. It is chiefly used along with food, and stimulates the stomach and assists digestion, beyond which its effects are also carried, as it promotes both perspiration and urine, and obviates a putrescent tendency in the system. Hence the vegetables possessed of this peculiar acrimony are distinguished by the name of antiscorbutic. While, therefore, the aromatic spices form the proper condiment for vegetable food, the acrid substances of the present kind are more suited to be used with animal food.

Black mustard is the seed of a plant, *Sinapis nigra*, which grows wild in most parts of Europe. During the middle ages it was in common use as a condiment. The size of black mustard seeds is but one-fifth that of white mustard seeds; one-third of their weight consists of bland fixed oil, while the pungent essential oil is not produced till the ground seeds are wetted. Both nitrogen and sulphur are contained in this pungent oil. The best flour of mustard contains only black and white mustard seeds. White mustard, the seeds of the *Sinapis alba*, does not afford a pungent oil.

Mustard is frequently adulterated with flour, salt, and turmeric.

Mustard, Dr. Lankester on.—

"Of course mustard," says Dr. Lankester, "is much too common and valuable a thing not to be abused. I remember some time ago some foolish person wrote a book recommending mustard-seed to be swallowed whole as a remedy for indigestion. Of course, if he had recommended people to swallow live frogs, he would have found some stupid people to believe in him, and so people swallowed whole mustard seeds. I very well recollect having been called, when commencing the study of medicine, to watch the suffering of a man who had swallowed quantities of these mustard seeds. He died: and when we came to open him, we found pints of these mustard seeds im-

pacted in his bowels. In some spots they were beginning to germinate, for the vital powers of the stomach had not overcome those of the grain, and the distention of the seed by this process seemed to be the cause of the death of the patient."

Mustard Plaster.—For a mustard poultice, or plaster, a sufficient quantity of powdered mustard should be taken to make a thin paste the required size. This should be mixed with boiling water, with a small quantity of vinegar added, if a very strong poultice is required, and spread on brown paper, or linen, with a piece of thin muslin over it. If the skin is very irritable afterwards, a little flour should be sprinkled over it. This will remove the burning sensation.

After the use of any kind of mustard poultice the skin should be carefully wiped with something very soft, so that no mustard be left behind.

Mustard Plasters.—See SINAPISMS.

Mustard Poultice.—See SINAPISMS.

Mutton.—Mutton is a highly nutritious and wholesome food. It appears to be the most digestible of all animal foods, and is, perhaps, more universally used than any other. Wether mutton is most esteemed, as being the sweetest and most digestible. The flesh of the ram has so strong and disagreeable a taste, and is besides so exceedingly tough and difficult of digestion, that it is never eaten but by those who cannot afford to purchase mutton of a better quality. *Ewe mutton*, if it is more than between three and four years old, is likewise tough and course.

Mutton chop contains—

	In 100 parts.	In 1 lb.	
		oz.	grs.
Water	44.1	7	24
Albumen	1.7	0	119
Fibrin (true muscle)	5.9	0	413
Ossein-like substances	1.2	0	84
Fat	42.0	6	315
Organic extractives	1.8	0	126
Mineral matters	1.0	0	70
Other substances	2.3	0	161

Mutton Broth with Vegetables.—Boil slowly in a pan for two hours a pound of mutton chops freed from fat. Remove the chops, and to the remainder add three carrots and three turnips that have been peeled, cut into slices, boiled, and the water drained off, and two onions sliced and boiled, and season with a little salt and celery. Simmer slowly for four hours. Put in the chops again and allow the simmering to go on for another hour.

Mutton Tea.—Take a pound of mutton, free from fat, cut it into thin slices, and pour a pint and a half of water over it, allowing it to macerate, as in the preparation of beef-tea. After macerating, boil for half an hour, and strain.

myopia the axis is too long, and no object can be seen distinctly until it is brought near enough to the eye to throw the focus of the rays of light coming from it back to the false position of the retina. In the accompanying diagram the continuous line shows the proper form of the eye, and the dotted line indicates the position of the retina in myopia.

It is thought that the tendency at least to short-sight exists, in most cases, at birth, and that it is, in a high degree, hereditary. It is possible, however, that it may sometimes originate in later life from abuse of the eyes, and there is no doubt that it is decidedly and often very rapidly increased. That it is extensively increased by close work, and is transmitted from parents to

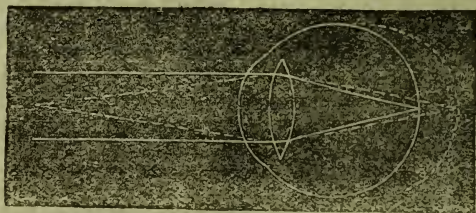


DIAGRAM ILLUSTRATIVE OF MYOPIA.

Myalgia.—See CHRONIC RHEUMATISM.

Myopia, or Short Sight (*Gr. muo, I close; ops, eye*).—Short-sight has for many years been called *myopia*, from two Greek words meaning, as just shown, to close the eyes, because short-sighted persons have the habit of half-closing the lids in the effort to see distinctly; and this term has been retained by modern authors.

While in the perfectly formed, or emmetropic, eye the focus for parallel rays of light falls accurately upon the retina, and in the hypermetropic eye falls beyond it, in myopia it falls in front of the retina. In hypermetropia the axis of the eyeball is shorter than the focal distance for parallel rays, and only convergent rays can be brought to a focus upon the retina; in

children through generations, is shown by its invariably greater prevalence among the classes that make most demands on the eyes. It is one of the penalties of advancing civilization, and is met with more frequently in old communities than in new, in cities than in the country, in the professions and among students and literary people than among those who labour only with their hands. Its greatest prevalence is in Germany, where it has long been impossible to fill the ranks of the army without allowing soldiers to wear glasses. It is comparatively rare among seamen and farmers, and no one ever heard of a short-sighted North American Indian.

Because short-sighted people can see small objects with great distinctness, and may be able to read after middle age without glasses,

there is a popular notion that short-sighted eyes are stronger than others. This is a dangerous delusion. Though myopia may remain stationary, and may be merely a matter of slight inconvenience, which is, to a great extent, compensated for by the ability to read without glasses at the age when others are entirely dependent upon them, an eye with a high degree of short sight is almost always an unsound one.

In short, myopia, when it exists in a high degree, is, in a large proportion of cases, a serious disease, which requires the most careful and skilful treatment.

Another common mistake is that short-sight diminishes with age. Old-sight affects only the near point of distinct vision, and not the far point; hence its effect upon a short-sighted eye will be to prevent it from seeing small objects so near as in youth, but not to make distant vision more distinct.

As a short-sighted eye is adapted only to divergent rays of light, it requires, for distant vision, the concave glass, that will give to parallel rays the necessary degree of divergence. If, for instance, the furthest point of distinct vision is twelve inches, distant objects will be made distinct by a double concave glass of twelve inches focal distance; because such a glass gives to parallel rays of light coming from a distance the same degree of divergence that light has which comes from an object twelve inches from the eye. Persons beyond middle age, and sometimes younger persons, who are too short-sighted to read comfortably without glasses, require two pairs, one for distance and one for reading. The selection of glasses for short-sight requires great care, as much harm may be done by using those that are too strong or that are not properly fitted to the eye.

As long sight and short sight depend upon the length of the axis of the eyeball, and not upon the curve of the cornea, it is hardly necessary to denounce the absurd pretensions of quacks, who have professed to cure them by increasing the convexity of the cornea with a suction apparatus or diminishing it by pressure.

M. D.

Nævus (*Lat.* *nævus*, mole or mark).—*Nævi* are of several kinds. First, we have the small (or large) brown spots often on the face, constituting *mole*. If these grow hair, we have a second variety; instances of both these may be met with daily, especially in elderly people. They should really not be interfered with, unless too unsightly, when surgical or other aid may be called in; but it is utterly useless to attempt their removal by means of washes, salves, etc.

The third variety of *nævus* is what is known as *nævus vasculosus*, and is made up of enlarged blood-vessels. It may be a mass of larger vessels, and form a tumour, or swelling, of a round or oval shape, and of varying size and height; or it may be composed only of the smaller capillaries and be level with the surface. The latter form constitutes what is known as *port wine mark* or *claret-stain*, and is the deformity more commonly called *mother's mark* or *birth-mark*.

Very ridiculous ideas are prevalent relative to the causes of these marks, of which we know nothing. It is often very gravely asserted that the mother, during her pregnancy, spilled some claret, or perhaps stained her face with a raspberry, etc., and that the child bore the mark in the same place; or, with reference to the dark moles, they will assert that, while bearing the child, they were startled by a mouse, etc., and that the mark is a consequence. Such stories belong to a past age, and are only mentioned here to deny absolutely their truth, because they are still current, even among those of some education.

There is also a popular prejudice against removing any of these *birth-marks* or *mothers' marks*, even though their presence in some instances may render the bearer hideous. There can be, of course, no objection to removing them; but this is unfortunately attended with some difficulty. It is, of course, perfectly useless to attempt to accomplish this by any washes or salves; it can only be done by the physician or surgeon.

Nails.—The nails are structures which are very nearly like the epidermis and the hair, composed of a hard, horny matter, arranged in the form of cells. They are indeed only altered portions of the external or epidermal layer of the skin, and rest upon their nail beds in much the same manner as the epidermis or scarf skin lies on the true skin or derma. Medical men speak of the *root* and the *body* of the nail—the root being that portion towards the hand which is situated beneath the skin, the body all the rest of the nail. The *matrix* is the bed upon which the nail rests, and to which it is firmly adherent. Nails grow from the root, just as do the hairs, and only slide over their matrix or bed, so that an injury to the matrix, such as slivers beneath the nail, or even a bad bruise, need not cause a dis-



THE NAIL.

figured nail other than of the portion directly injured; whereas injury or disease of its root will generally cause a distorted and disfigured nail.

The nails seldom fail to give indications of sickness which has been at all severe by an arrest of development, which has taken place in the root at the period of sickness. The nails also show peculiar characteristics in other states than acute sickness. Thus, in pulmonary consumption they are generally long and curved both from side to side and from end to end; whereas in certain other states they are apt to be short, straight, and rather clubbed.

The accompanying illustration shows a vertical section of the ungual portion of a finger, to show the appearance of the nail: *a*, the fold of epidermis at the base of the nail; *a'*, the epidermis, showing its continuity with the deepest layer of the horny lamina;

b, the body of the nail; *c*, the duplicature of the skin, into which the nail is received; *c'*, the thick dermis separating the nail from the phalanx.

Nap, Occasional.—An occasional nap has met with a warm defender in the celebrated Dr. Kitchiner, who says: "Persons who are in a state of debility from age or other causes will derive much benefit from lying down and seeking repose whenever they feel fatigued, especially during (the first half-hour at least of) the business of digestion, and will receive almost as much refreshment from half an hour's sleep as from half a pint of wine."

"The restorative influence of the recumbent posture cannot be conceived; the increased energy it gives to the circulation and the organs of digestion can only be understood by those invalids who have experienced the comfort of it."

"The siesta is not only advisable but indispensable to those whose occupations oblige them to keep late hours. Actors especially, whose profession is, of course, most fatiguing, and requires both the mind and the body to be in the most intense exertion between eight and eleven o'clock at night, should avail themselves of the siesta—which is the true source of energy—half an hour's repose in the horizontal position being a most beneficial restorative."

"Is it not better economy of time to go to sleep for half an hour, than to go on noodling all day in a nerveless and semi-superannuated state—if not asleep, certainly not effectively awake for any purpose requiring the energy of either the body or the mind?"

"When the pulse is almost paralyzed by anxiety," adds Dr. Kitchiner, "half an hour's repose will cheer the circulation, restore tranquillity to the perturbed spirit, and dissipate those heavy clouds of *ennui* which sometimes threaten to eclipse the brightest minds and the best-hearted. Child of woe, lay thy head on thy pillow (instead of thy mouth to the bottle), and bless me for directing thee to the true

source of Lethe, and most sovereign *nepenthe* for the sorrows of human life."

Narcotics.— See STIMULANTS AND NARCOTICS, WHETHER TO USE OR NOT.

Narrow Swallow.— A common anatomical error is that which people often run into, of supposing that they have what they call a *narrow swallow*. Such people cannot take pills. The same people will swallow much larger bodies with ease. A medical man tells us he has several times been called to children who have swallowed marbles and other large bodies, whilst the mothers have asserted that their throats were too narrow to admit the passage of pills. In these cases there seems a want of consent in the muscles of deglutition with those of the mouth and palate, and this must proceed from a mental feeling, sometimes difficult to overcome.

Nasturtium (*Lat.* *nasus*, nose; *tor-tus*, twisted; from *torqueo*, I twist; in allusion to the effect of its pungent taste and odour).—The elegant nasturtium plant, called by naturalists *Tropæolum*, and which sometimes goes by the name of Indian cress, came originally from Peru, but grows readily in the United Kingdom. Its young leaves and flowers are of a slightly hot nature, and many consider them a good adjunct to salad. The buds and seeds of the nasturtium are both used for pickle.

Natural Decay of Old Age.— In the instructions supplied by the Registrar-General to those who are called upon to give certificates of the causes of death, the entry is provided of "Natural Decay of Old Age." According to Dr. Hood, however, in his "Treatise on Gout, etc.," the cases are very rare in which such an entry can be made with correctness. He says:—"In recording my individual experience of the termination of human life, it may sound strange when I state, notwithstanding the number of old persons whom I have seen die, that I have not as yet seen

one who has died from real old age—in whom the machine, so to speak, has been thoroughly worn out from the lapse of time; but that in every case the aged have succumbed to some disease, which, if it had occurred twenty years earlier in their lives, would have been quite as likely to have carried them off. I speak only of what I have seen, and do not for a moment venture to dispute the fact that people do die of old age, although at present it has not been my lot to observe such an instance."

After quoting some statistics from the Registrar-General and from the *Edinburgh Review*, Dr. Hood proceeds:—"It must occur to most persons, on reading these statistics, that some glaring faults must exist in order to render the mass of human life of such limited duration. The gross ignorance of the lower orders—their habits and the localities in which they live—may, in some measure, account for the great mortality that occurs in early life, as it is chiefly among the children of the poor that we shall discover that one-fourth of those who are born die before reaching the age of seven years; but when we learn that half of those who are born die before reaching their seventeenth year, the amount does seem prodigious. We are less at a loss to understand so few persons passing their sixtieth year—six only out of a 100 attaining that age—and this notwithstanding the decisive opinion expressed by M. Flourens that all men ought to live to 100. There is but little improvement in the present day in the increase of longevity. On looking at the obituary of *The Times*, a short time ago, my eye was caught by the insertion of six deaths following each other—63, 65, 66, 68, 66, 66: all falling short of the scriptural dictum concerning the life of man."

In presence of such facts as these, Dr. Hood looks about him for some explanation of the causes, and he says:—"It may sound very harshly to some ears when it is asserted that most, if not all, our illnesses are the result of one of two things—either of our ignorance or of our indiscre-

tion: our ignorance in not being acquainted with the laws that govern health, and our indiscretion when we know them, in failing to yield obedience to them. Nothing can be easier than to test the truthfulness of this painful aphorism if those who hear it will apply it to the cases of the persons with whom they have been intimate and who have died long before their time. They will usually discover that some imprudence had been committed by the individual, either for a longer or shorter time; he may have indulged too freely in the pleasures of the table, abandoning the exercise which was formerly customary to him; he may have become a daily or nightly spirit-drinker—one of the most undermining habits that can be pursued, even although it may not appear to produce any ill effect for a time. He may, in fact, have transgressed the majority of those laws which govern our health, in some instances knowingly, in others unconsciously, the result, however, being always the same. Excess in eating, in drinking, in fasting, in smoking, may all prove factors in the shortening of the duration of life, as well as undue exposure to cold, with an insufficient amount of clothing; but, perhaps, the most fertile source of all is neglect of the signs of coming diseases with which Nature invariably furnishes us. If we allow these signs to pass by or to escape us without attempts at correcting what they indicate, a downward progress is suffered to continue, which might, otherwise, perhaps, have been long retarded.”

Natural Disinfectants.—See DISINFECTANTS, NATURAL.

Natural Marks of Old Age.—The natural marks by which we discern that a man is made for long life are principally as follows:—

1. To be descended, at least on one side, from long-lived parents.
2. To be of a calm, contented, and cheerful disposition.
3. To have a just symmetry or proper con-

formation of parts; a full chest, well-formed joints and limbs, with a neck and head large, rather than small, in proportion to the size of the body.

4. A firm and compact system of vessels and stamina; not too fat; veins large and prominent; a voice somewhat deep, and a skin not too white and smooth.

5. To be a long and sound sleeper.

Natural Uses of Hair.—See HAIR, NATURAL USES OF.

Nature and Medicine.—“In illness it is, in general,” says Dr. Graham, “a capital error to look chiefly to medicine for cure. A strong tendency exists in many diseases to a spontaneous favourable termination. Therefore, if we do not do wrong, they will get well under the use of rest, cleanliness, pure air, good diet, and a little saline aperient. Remember that the restorative powers of nature are great, very great; and consequently many disorders will be cured by time, mild diet, cheerful conversation, rest and pure air, without medicine. This is true of many mental disorders, and equally so of many surgical complaints, such as affections of bones and joints. Rest joined with exercise, cheerful society, cleanliness, pure air, and a mild diet of easily digested food, are, therefore, among the most powerful means of cure.

“On the other hand, some diseases are curable only by medicine. Here, in prescribing the appropriate medicine, in the right dose and manner, the skill of the physician is often strikingly displayed, and the patient certainly, and sometimes speedily, recovers.

Nature, Warnings of.—See WARNINGS OF NATURE.

Necessity for Bodily Exercise.—See BODILY EXERCISE, NECESSITY FOR.

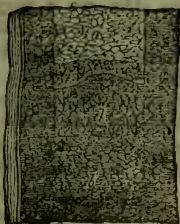
Neck, Dislocation of the.—Dislocation of the neck is a most serious matter, either destroying the person on the

spot, or causing complete paralysis of every part below the injury. It will not be out of place to notice here the so-called *dislocation* of the neck. It will be occasionally heard among sporting persons that "Mr — was thrown from his horse and dislocated his neck, but it was put in directly, and he rode on as if nothing had happened." Now in such a case there is no dislocation of the neck. All that happens is that the person, being thrown from his horse, pitches on one side of his head, which forcibly twists his neck in the opposite direction, and the muscles on the struck side cannot recover from the violent wrench, and consequently the head remains fixed, looking over the opposite shoulder. The remedy consists in seating the man on the ground, and placing his shoulders between the knees of another person, who lays hold of the head with both hands, gives it a twist in the other direction, and all comes right.

Necrosis.—See MATCH MAKERS.

Nectarine (*Lat. nectar*, the fabled beverage of the heathen gods).—The nectarine is a fruit resembling the peach, but, having a smooth skin, more like that of the apple in appearance, instead of a soft, downy one. It is liable to disagree with some stomachs.

Need for Rest.—See REST, NEED FOR.



SECTION OF SKIN OF NEGRO.

Negro's Skin, Why Dark (*Spanish, negro*; from *Lat. niger*, black).—In the negro, the dark hue of the skin is due

to the presence of a pigment, or colouring matter, in the lower layers of cells of the epidermis, that is, in the *rete mucosum*, the part directly above the papillæ of the true skin. The corium, or true skin, which is made up of fibres, does not share at all in this pigmentation.

The accompanying illustration represents a vertical section, considerably magnified, of the skin of a negro: *a*, the cutis, or true skin; *b*, the pigmentum, or colouring matter; *b'*, the epidermis, or cuticle.

Negus.—This is a common beverage, so called because first introduced by Colonel Negus. It consists of wine and water with the addition of juice of lemon or Seville orange; it is both an innocent and wholesome beverage, and from the addition of the fruit it is both diuretic and stomachic.

Nerve Action, How Excited (*Lat. nervus*; *Gr. neuron*, sinew or bow-string).—The stimuli by which the action of nerves is commonly excited are of two kinds, mental and physical, and the change which these stimuli produce in a nerve develops the power known to physiologists as nervous force. "The nervous force," says Dr. Sharpey, "has long been likened to electricity, but rather through a vague perception of analogy than from any rigorous comparison. It is true that electric force is developed in the nerves, and even exhibits modifications connected with different conditions of nervous action. Still, it must be borne in mind that the evolution of electricity is a common accompaniment of various processes involving chemical change, whether within the living body or in external nature: and the tendency of recent speculations is not towards the identification of the nerve force with electricity, but rather shows that the two stand related in the same way as electricity and other physical forces are related to each other—that is, as manifestations of a common force or energy, of which they, severally, are the special modifications."

It has been remarked by G. H. Lewes

that "in the mighty web of things there are no threads more wonderful than sensation and thought; nor have any more constantly solicited the attention of philosophers from the earliest dawn of speculative inquiry to the angry contests of to-day. They have been problems ever-alluring and ever-baffling; one moment the threads seem to be within the easy grasp of an outstretched hand, only to vanish again into the inextricable confusion of tangled mystery."

Nerves.—From the various masses within the head, nine pairs of nerves proceed. From the spinal cord, or marrow, go thirty-one pairs. The nerves from the head pass out at various holes in the skull, those from the spinal cord pass between the vertebræ.

A posterior view of the spinal cord with the roots of the nerves is given in the accompanying illustration: *a*, the posterior pyramids; *b*, *g*, the filum terminale, or terminal filament of the spinal cord; *c*, the origin of the cervical nerves; *d*, of the dorsal nerves; and *e*, of the lumbar nerves; *f*, the cauda equina. The spinal cord is that portion of the cerebro-spinal axis which is contained in the spinal canal. It extends from the foramen magnum of the occipital bone to about the second lumbar vertebra, where it terminates in a slender filament of nervous matter called the *filum terminale*, which is continued onwards to the lower end of the sacral canal. The length of the spinal cord varies from fifteen to eighteen inches. It is closely invested by a very vascular membrane called the *pia mater*, while the canal in which it lies is lined by a strong fibrous membrane called the *dura mater*. There is a groove on the anterior aspect of the cord, dividing it nearly to its centre, and a similar



SPINAL CORD.

groove on the posterior aspect. The former is called the *anterior median fissure*, the latter the *posterior median fissure*. Along each lateral aspect of the cord a series of nerves is given off. It consists of the spinal nerves, of which there are thirty-one pairs. Each nerve arises by two roots, an *anterior* and a *posterior*, so that the number of roots arising from each half of the cord is double that of the nerves.

Nerves of Face.—See FACE, NERVES OF.

Nerves of Respiratory Apparatus.—These nerves have their origin in the spinal cord, the medulla oblongata, and brain, but chiefly in the first-named. The respiratory function, therefore, is chiefly of the reflex character, and independent of the will—but not entirely; or it may be caused by the stimulus of the carbonic acid of the venous blood acting upon the filaments of nerves in the lungs going to the nervous centres, by the stimulus of cold affecting the nerves going from the surface of the body, by certain mental emotions, and also by the will.

Nerves of Skin.—The nerves of the skin are a very important element, and the abundance of their distribution may be also judged by the pain caused by the entrance of a pin, or even the penetration of the minute sting of an insect. This very abundant nerve-supply of the skin, which is undoubtedly for the purpose of protecting us against injury, is accomplished by the most delicate division and distribution of the nerves, until their extremities are lost among the deeper cells of the epidermis. It is exceedingly difficult to trace these nerve-fibres, and

this has only been accomplished quite recently by means of staining the sections of the skin with chloride of gold. This kind of nerve gives ordinary sensations of pain, heat and cold, etc., but there is a somewhat different class or arrangement of nerves, whose function is to preside over the special sense of touch. These end differently: they enter the papillæ of the corium, and appear to be wound up in a little knot. These little knot-like bodies are called *tactile corpuscles*, because the sense of touch is supposed to reside in them. They are always found on the palmar ends of the fingers, and are most numerous there, but are present in a lesser degree over most of the surface.

If any part were destitute of nerves of sensation, its texture and vitality might be destroyed without our being conscious of the fact; whereas, in consequence of this provision of sensory nerves, no object can touch the skin without our being instantly made aware of its presence and properties. A case may be mentioned as illustrating in a striking manner the great utility of these nerves in warning us of danger: "The patient's hands, up to the wrists, and the feet half-way up the legs, were perfectly insensible to any species of injury, as cutting, pinching, scratching, or burning. . . . He accidentally put one of his feet into boiling water, but was no otherwise aware of the high temperature than by finding the whole surface a complete blister on removing it."

Nerves, Sensory, Their Influence on Disease.—One of the most important bearings nerves have on disease is that exercised through sensory nerves; these, whenever over-stimulated, it matters not by what means, give rise to a peculiar sensation called *pain*, and this pain, which is a purely nervous adjunct to most diseases, sometimes rises to the dignity of disease itself. But the pain thus experienced and referred to some particular part is not really felt there; it is felt in the brain; but the origin of the impression is ordinarily, but not always, referred to the diseased or in-

jured spot. But this painful impression, in its turn, affects other parts; the nerves which rule the action of the heart are affected, and so that peculiar sickening feeling and palpitation, or tremulous action, of the heart is produced, which is commonly the result of great bodily pain. The sickness is referred to the stomach, the palpitation to the heart; but it is the same nerve which produces them both, and the same stimulus which affects the nerve. Of recent times this mode of arguing has had wider application. The set of nerves which are known as vaso-motor nerves run along the blood-vessels and with them penetrate into every part. The blood-vessels possess a distinct muscular coat, which is ruled by these nerves; inso-much that when the nerves are stimulated these muscular fibres contract, and so diminish the calibre of the vessels, and, consequently, the supply of blood sent to a part. On the other hand, when the power of these nervous cords is relaxed, the muscular coat of the vessels dilates, and so their calibre is increased, thereby, of course, increasing the quantity of blood sent to a part. Some seek to account for the phenomena of inflammation in this way, but, in the meantime, our knowledge is too scanty to admit of any wide generalization. Nevertheless, such facts show how much nervous influence is connected with disease, and that is a fact never to be overlooked. No part or organ of the body can be isolated or considered apart from its neighbours; all are mutually dependent, so that when one is ill the others are sure not to be well. This is especially true of the nervous system. Sound health requires that it should be in a carefully balanced condition, and any organ out of order is apt to give rise to this imperfectly balanced state of the nervous system. Say, for instance, that an individual suffers habitually from indigestion, so that his body is ill nourished, his brain, of course, will be so also. In him, comparatively slight causes will bring on nervous manifestations owing to this condition of his system; he may be impatient of slight sounds or garish colours; in point of fact, slight stimuli give rise to

inadequate results. This is the condition which, in ordinary parlance, is called nervousness, or the individual is said to have "the nerves." Rest, quiet, and good nourishment are the appropriate remedies.

Nerves, Velocity of Transmission of Impressions by.—See VELOCITY OF TRANSMISSION OF IMPRESSIONS BY NERVES.

Nervous Diseases in Modern Life.—There exists, both within and without the ranks of the medical profession, a widespread belief that the exigencies of modern life are producing an ever-growing amount of nervous diseases. At first sight it seems easy to decide whether this belief be or be not well founded. In reality, however, it is at present not possible to come to a positive conclusion as to how rapidly nervous diseases are increasing. Reliable statistics are wanting. The figures furnished by the Registrar-General are the best at command, but they are open to grave criticism. By way, however, of treating the matter as satisfactorily as possible, the following table, taken from Dr. Althaus's work on "Diseases of the Nervous System" is appended. This table appears to prove that the importance of the rôle played by nervous disorders does not increase.

Another very curious result, seemingly proved by the figures of the Registrar-General in the hands of Dr. Althaus, is

that the deaths from affections of the class under consideration are proportionately more numerous in rural districts than in cities. Thus, in a period of twenty-five years, the percentage of deaths from nervous diseases was, in London, 10·66; in the south-western counties of England, 11·20; in Wales, 15·38.

In view of these facts, it would appear that the popular belief in the increase of nervous affections rests only upon the superiority of modern diagnosis; or, in other words, that nervous diseases seem more frequent only because we recognise them more clearly than did our fathers.

Nervous Disorder in General.—Weakness and irregular action of the greater part or whole of the nervous system is now so common as to render it necessary to say a little on the subject of nervous disorder in general, without adverting here to any determinate nervous affection, which is treated of under its respective title.

Nervous Disorder in General, Causes of.—The chief causes of nervous debility are a sedentary or luxurious mode of living; extreme anxiety; severe and protracted application to business or literary pursuits; the excessive use of calomel or other mercurial preparations; costiveness and great disorder of the functions of the digestive organs, and, indeed, whatever greatly enervates the general system.

TABLE SHOWING THE COMPARATIVE MORTALITY FROM ZYMOTIC, TUBERCULAR, NERVOUS AND RESPIRATORY ORGANS.

	Zymotic Diseases.	Percentage.	Tubercular Diseases.	Percentage.	Nervous Diseases.	Percentage.	Respiratory Diseases.	Percentage.
1838-42	347,158	20·04	347,738	20·03	209,923	12·10	143,084	8·54
1843-46	Vacat.	...	...	...	...	...	...	...
1847-51	498,532	24·63	313,651	15·50	239,881	11·84	233,045	11·50
1852-56	454,231	21·85	335,275	16·10	258,221	12·40	272,970	13·15
1857-61	471,865	21·80	331,181	15·29	271,997	12·54	316,407	14·59
1862-66	560,015	23·36	347,644	14·51	293,175	12·23	357,522	14·92
1867-71	562,487	22·72	350,719	14·16	308,900	12·48	379,694	15·33
Mean percentage of Six Lustra.		22·90		15·94		12·26		13·00

Nervous Disorder in General, Distinction of.—Persons are frequently met with in a low, nervous condition, whose case requires the exercise of consideration and discernment in order to ascertain whether their malady be really nervous or the result of some positive but latent disease. A principal feature to be attended to is, that the purely nervous patient is always worse in the morning, and gradually grows better as night approaches, being then more cheerful and active, and often able to sit up to a late hour with much satisfaction and enjoyment. On the contrary, the individual who is labouring under some concealed disease of a particular part is invariably more light and comfortable in the morning, but grows feverish, fatigued, and restless towards night. It should be added, however, that when there is considerable muscular, as well as nervous, debility, arising, for instance, from simple disorder in the digestive functions, patients often grow fatigued and feverish towards night, although there may be no positive mischief in any part of the frame.

Nervous Disorder in General, Forewarnings of.—Both to the paroxysmal and steady brain-worker it is important to be able to perceive the indication of the coming storm, and so avert evil. The forewarnings of nervous breakdown are sometimes very plain, and sometimes so obscure as to be read only by the most skilful physician. To discuss them at all satisfactorily would carry one far beyond the bounds and scope of this work; all that can be done is simply to outline a few of the more important.

Excessive nervousness, or irritability, as every unfortunate wife of a hard-driven brain-worker well knows, is a very common result of over-work. Its meaning is that the over-taxed nervous system is so exhausted that the least discord or unnecessary effort is painful to it. It is often preservative of health, because it becomes so annoying to the man himself as to drive him to rest. What pain is to the broken limb, such

is nervous irritability to the exhausted brain; by suffering, it forces the worker to let his nervous system rest. It rarely presages those serious disasters which come suddenly after a prolonged strain lasting for years. The dangerous brain condition is that in which the cerebrum has become so benumbed as not to feel the peril, and demand a halt.

Headache is another of those fortunate symptoms which are of a character to make themselves so felt as to force the attention of the brain-worker. The head is often the seat of unpleasant sensations which are not headache, but which, as the signs of mental over-driving, are of even more serious meaning than is headache. Such as a sense of weight on the top of the head, a feeling of constriction of the forehead, or a more general cephalic distress. Such phenomena, occurring after long-continued strain, are very significant, and should always be heeded.

Sleeplessness is a very common indication of over-work, which, when pronounced, demands medical advice. Of still more importance are the following manifestations, and the only counsel we can give those who suffer from them is to lose no time in trifling, but to seek at once the best medical attention: such as numbness in one or more of the extremities, permanent slight loss of control over some groups of muscles, momentary loss of consciousness, failure of memory, or loss of the power of fixing the attention. In some cases the forewarnings consist simply of momentary losses of power in the arms or legs.

Nervous Disorder in General, Precautions against.—The most important rules for brain-workers are the following:—

1. To avoid excitement and emotional disturbance as far as possible.
2. To take proper rest, one proportionate to the labour.
3. To keep in order the instruments with which the brain works.
4. To avoid unnecessary labour and worry.

5. To avoid overtaxing the unmatured brain.

Very simple common-sense rules, of which most persons will say, "I know all that"; but of which most persons are, to a greater or lesser extent, habitually disregards.

Nervous Disorder in General, Symptoms of.—Palsy and epilepsy, with several other complaints, which may be enumerated, are, in the majority of instances, strictly nervous maladies; but being determinate forms of this class of diseases, they are separately noticed under those heads. What we refer to here is a general weakness and derangement of the nerves, the symptoms of which are well known to most people in a greater or less degree. They are, depression of spirits, timidity and irresolution, general irritability and restlessness—accompanied frequently with such an uncomfortable state of feeling as is more easily conceived than described; often pains in the head and shooting pains in various parts of the body, restless nights and general languor and debility.

Nervous Disorder in General, Treatment of.—Perhaps the most common causes of general nervousness are costiveness and a deficiency of active exercise in the open air of the country; and, therefore, the two principal points of attention are the proper regulation of the bowels, so that they may be exonerated daily without irritation, and the quitting of sedentary habits and a crowded city for active exercise in the open country air. Striking advantage is often gained in this complaint from obviating costiveness, the means of accomplishing which have been pointed out in a preceding chapter. Daily friction, with the flesh-brush, over the region of the stomach and bowels and all the large joints, and early rising, must make a part of the general plan. The friction must be performed by the patient himself. The diet should be nourishing, and easy of digestion, as advised under *Indigestion* (which see); and warm

rooms, hot beds, and everything which is relaxing must be studiously avoided.

So valuable is constant exercise and pure air in the cure of general nervous disorder that a celebrated foreign physician accumulated a large property from his success in the treatment of such affections by these means. He was in the habit of imposing long rides or walks every day, with early rising, so that his patients were fully exercised, but short of any particular fatigue; by which practice he insured a keen appetite, perfect digestion, refreshing sleep, and regular bowels, and by degrees gave an abiding tone to the nerves and muscles of every part.

Nervous Influences on Circulation of Blood.—The circulation of the blood is greatly influenced by the nervous system. Almost all of us have experienced that palpitation or jumping of the heart when we have been suddenly startled or frightened. The whole of the blood-vessels and the heart are connected by nerves with the brain and spinal marrow. The small arteries throughout the whole body possess a muscular coat, which, by contracting, is able to diminish the capacity of the arterial tube. Now, connected with the muscular coat of each artery are numerous nerves, whose duty it is to regulate the calibre of these vessels; the result being that the nervous system is able to control the circulation of the blood in various parts.

As an example, take the act of *blushing*; it is a purely local affection. How is it caused? An emotion, sometimes pleasurable, sometimes painful, takes possession of the mind. Thereupon a hot flush is felt; the skin of the face grows red. The face grows hot and red because the blood-vessels contain an increased quantity of the red and hot fluid. Its vessels contain this increased quantity of blood because the small arteries suddenly dilate; the contractile power of the arteries being lost for a time, owing to the nerves which control the contraction being affected by a mental emotion.

Nervous System.—One of the chief distinctions between the animal and the plant is that the former possesses a system of nervous tissue. Of this plants exhibit no trace, and even in some of the lower developments of animals, which are scarcely to be distinguished from vegetables, it has hitherto been undetected.

Wherever a nervous system exists it is always found to consist of two parts, one of them white and opaque in appearance, and, when examined under the microscope, presenting a tubular or fibrous structure, the other of a reddish grey colour, and made up of cells or vesicles filled with granular matter. It appears as if these two forms of nervous substance must be present to secure the successful working, so to speak, of the apparatus. In the large nervous masses, such as that of the brain, the distinction is very marked, as any one may see who will take the trouble to examine the head of a sheep.

The larger proportion of the brain, spinal marrow, and nerves is composed of the opaque white nerve matter; the grey is more sparingly distributed, and is evidently the apparatus in which the nerve force is generated, the tubular substance acting the part of the conductor. This is more easily seen when the latter is thrown into the form of the nerves, or cords of nervous matter, which are distributed throughout the body. These nerves, at their origin, are connected with the grey substance, with the vesicles of which we find their fibres intermingled. Where this intermingling occurs, an enlargement, or, as it is called, a "ganglion," is formed. In the lower orders of animals, in which the nervous system is simple in a degree harmonizing with the simplicity of their structure, these "ganglia," resembling knots upon the nerves, are all they possess by way of a brain, but as we ascend the scale towards man, we find that the nervous system becomes more and more highly developed, and that the nerve substances are collected or aggregated into masses which are carefully protected from all external injury, and from which the nervous cords,

or conductors, or, as they are usually called, "nerves," proceed to all parts of the body, each being enclosed within its own proper sheath, and dividing and subdividing, to be distributed to every portion of the frame, although to some, such as the ends of the fingers and the lips, their branches are more liberally allotted than to others.

In the case of man, the great nerve masses are divided into the brain, or *cerebrum*; the little brain, or *cerebellum*, the *medulla oblongata*, and the *ganglia* of the special senses. These parts are all packed within, and protected by, the hard, bony skull. Continued from the medulla oblongata there is the *spinal cord* or *marrow*, which has its own special canal carried through the bodies of the vertebræ of the spine, and thus is very carefully protected.

Nervous Temperament.—The nervous temperament consists in an active state of the nervous system and brain. The muscles are slender; the lips thin; the eyes bright; the pulse quick but not full, and the intellect quick and brilliant.

Nettle.—"In some parts of the country nettles are used as articles of diet, and are used as a vegetable. They are wholesome, indeed almost medicinal, in their properties. A light kind of beer is made from the stalks and leaves of the nettle in some parts of England, and may be seen advertised at stalls and in humble shops in Manchester and other towns."

Nettle-Rash.—See URTICARIA.

Neuralgia (*Gr.* neuron, nerve or sinew; algos, pain).—This is a term given to pains sometimes following the tracks of nerves, sometimes lying apart from them, which cannot be referred to any distinct morbid change going on in the part. Nevertheless, though there may be nothing in the spot to account for the pain, this may be of the severest possible character, and we are fain, for want of a better causation, to refer it to the nerves of the part.

Now, nerves, when cut, are not more

painful than other parts. There is absolutely no pain experienced in slicing the brain; inflammation in the tendons, ligaments, and the like, where there are few or no nerves, is intensely painful. Sometimes, however, pressure on a nerve will give rise to pain in distant parts of a most intolerable character. Such is seen in aneurisms of internal vessels pressing upon nerves, and giving rise to frightful neuralgias. But in ordinary neuralgia we have nothing of the kind; we have only most intolerable pain, and no apparent cause for it.

In point of fact, whenever we see pain long continued and aggravated, and at the same time we can make out no definite cause for the pain, we term it neuralgia. Neuralgia, strictly speaking, however, ought to be restricted to pain in the course of nerves, and some nerves are affected much more frequently than others. Thus, neuralgia of the nerves which gives the face sensation is by no means infrequent; it is most commonly called *tic-douloureux*. Sometimes the head on one side may be affected; or yet again the sciatic nerve be its subject, giving rise to the condition called *sciatica*. But internal organs may be affected in like manner, so that we may have neuralgic pain of the heart, stomach, or intestines, still more frequently of the womb, the bladder, or the rectum—pain not due, that is, to any inflammatory or other local change, but due merely, as far as we can see, to irritation of the nervous filament supplied to the parts. It is hard, however, to determine whether such and such a pain is neuralgic where internal organs are concerned; so here we shall limit ourselves to an account of the simpler and better known varieties of neuralgia.

Neuralgic attacks commonly affect one side only, and they are often attended by, or end in, attacks of nausea and violent vomiting. The pain varies in severity from a slight twinge now and again, to unbearable agony. Not unfrequently this pain becomes periodic in its onset, appearing at certain hours of the day and departing at others—thus simulating the effects of malaria.

Whether such periodic neuralgias are really produced by malaria is not plain; undoubtedly cold and damp do exercise a powerful influence over them.

Neuralgia, Causes of.—Certain forms of neuralgia appear to be associated with anæmia, and a goodly number with imperfect digestion, so that frequently bad teeth and their consequent imperfect mastication of the food setting up dyspepsia, go hand in hand in producing faceache. Undoubtedly bad teeth are one of the most prominent causes of faceache and neuralgia. Exposure to a draught of cold air falling on the side of the face is not an uncommon cause of neuralgia. This, perhaps, most frequently occurs in crowded halls or assemblies, where a window or door has been partially opened for ventilation, or driving home in a carriage with the windows open, or the like. These causes are all the more likely to set the pain a-going if any such permanent irritation to the gum as bad teeth exist, or if the patient is liable to attacks of neuralgia of the face. The pain frequently prevents all attempts at sleep, but once the patient has fallen asleep, he may rest soundly, for the pain no longer torments him. Neuralgia of the head presents nothing special. Fatigue or debility is its most frequent cause.

Neuralgia, Treatment of.—One thing to be noted with regard to all neuralgic attacks is that they are most frequently brought on by fatigue, mental or bodily; or, if not produced by these causes, are most readily produced by any other cause in subjects who have been exposed to them or are suffering from the weakness produced by them. This is a most important indication in the treatment; indeed, it may be said to be a basis. Rest and nourishment—nourishment and rest are the foundations of our means of dealing with neuralgia. Nourishment may be taken with tolerable ease. But in certain cases where there is sickness and vomiting there may be some trouble to improve the general condition.

This form of neuralgia is often associated with bad teeth, and these must promptly be removed. Frequently, after this is done, nothing except tonics are required. Stimulants too, are, as a rule, necessary, but must be carefully selected to meet the wants of each individual case. Rest is all-important, but rest is not always attainable without something being done for the patient. When the pain is very severe, the best thing that can be done after having had the bowels well cleared out (this in all cases is an indispensable preliminary) is to give the patient the fifth of a grain of morphia acetate under the skin of the arm. This will relieve the pain, and procure rest so much needed. Many, indeed, look upon this as being the treatment in all instances, but its true value we have just pointed out—it procures rest, and so allows time for self-recuperation.

For opening the bowels in the first instance, saline purgatives are perhaps best, but they may not act sufficiently powerfully, and so calomel or even croton oil are required: best of all use the repeated doses of a laxative mineral water, such as may be procured at many spas. Aloes, especially as watery extract, is a good preparation, particularly in sciatica, where there is a suspicion that the cause of the malady is over-distended bowels.

In most cases iron and cod-liver oil are essential. Iron is best given in some mild form, as carbonate, or as reduced iron, or as peroxide. Cod-liver oil is best given just after food; iron along with food. In reality they are both forms of food rather than of medicine. If the malady is periodic, as it often is, whether this depends on malaria or no, quinine had better be given, at first in full doses (five grains or so), after, in small quantities, say five grains of the citrate of iron and quinine three times a day. If there is indigestion, that, too, must be seen to, rhubarb and soda, or potass, being usually the best remedies.

In all cases of neuralgia produced by local causes it will disappear with the removal of the cause, and will not disappear until

the cause be removed. Thus it is utterly useless to apply soothing remedies, ointments, lotions, or what not, for neuralgia dependent on a bad tooth or a diseased jaw. Once these are seen to, the neuralgia will go.

Neuralgia in Auditory Canal (*Lat. auditorium, place of hearing; from audio, I hear*).—A word must be given here about a very painful disease, viz., neuralgia in the canal. This, of course, is classed with earache, and often falls under the domestic treatment for such complaint. Its cause is almost invariably decayed or improperly filled teeth. A singular feature of this disease is that very often the tooth which causes the pain in the ear is not painful itself or even tender to the touch. Of course, where toothache exists, and seems to dart into the ear, the patient is often led very improperly to consider the tooth as the real cause of the earache. There is no discharge in these cases—at least, not at first; and there is no attendant deafness, nor noises in the ear and head. When, therefore, a severe pain sets in, in the ear, without *any other* symptom in the ear, the patient should conclude that his ear is neuralgic by reflection, as it may be termed, from the decayed or otherwise diseased tooth. An examination of the mouth in such cases will generally reveal at least a hollow tooth, or a tender one on the same side as the aching ear.

Too frequently, however, the neuralgia is mistaken for inflammation in the ear, and improper remedies of all kinds, hot oils, fats, various kinds of vegetable matter, etc., are put in. These irritate the ear; and, finally, in addition to the neuralgia, there is an inflammation, with discharge from the ear. The only cure for neuralgia in the auditory canal, or in the ear, is the treatment or extraction of the offending tooth. In this instance the pain will disappear on the cure or removal of the diseased tooth.

New House, Precautions with.
—Every new house or newly plastered

house should be allowed ample time to dry before it is occupied, and attacks of sickness by the million have arisen from ignorance of this fact. Von Pettenkofer, well known as one of the greatest sanitarians, calculates that the walls of a house containing one hundred thousand bricks, also contain ten thousand gallons of water, when first completed, and he wisely insists that nearly all this fluid should evaporate before human beings are permitted to inhabit the dwelling.

There is a mistake frequently made by the hasty occupant of a new dwelling, which often proves too precipitately fatal to allow even the leisure required for a useful repentance. Inspecting the surface of the walls, and finding them to all appearance dry, he moves in with the utmost confidence; but has hardly made his first fire when he discovers that the walls, which had been declared by others and felt by himself to be "as dry as a bone," begin to show on one surface or another, in this or that corner, now small islets and then great continents of moisture. From the windows, too, he sees full streams of sweat rolling down, and feels the whole atmosphere of the house to be reeking with a musty dampness.

We need hardly say that the unhappy occupant has been the victim of the ignorance or cunning of the builder and a presumptuous confidence in his own senses. His house, in a word, was not dry when he entered it. There was certainly a sufficient appearance of dryness before occupation to delude the senses of any ordinary observer, but no sooner has the dweller entered with his family, than these obvious proofs of continued moisture manifest themselves. The atmosphere has become saturated with the watery vapour exhaled from the lungs and skin of the inhabitants of the house, and produced by the various functions of the household, in which a free use of water at a high temperature is requisite. If the walls had been thoroughly dry, this moisture would have passed through their pores; but meeting with the opposing water with which they are saturated, it is deposited in distinct

spots upon their cold surfaces. The apparent dryness which had deceived the occupants of the house was owing to the air mixed with the water contained in the superficial pores of the material composing the structure. All the rest were obviously filled with moisture only, for no sooner was a considerable quantity of water produced inside the dwelling by habitation than, finding no outlet through the wall, it was necessarily deposited on its surface.

It must not be supposed that, when water is found to dim the inside of the window-panes, the building is not dry. Whenever the atmosphere of a dwelling is saturated with watery vapour, the glass—for it is not porous—will show indications of it, but the walls will not unless they are almost or wholly filled with humidity already. Moist spots showing here and there upon the walls of a house soon after occupation, however dry before they seemed to ordinary observers, and however dry they are pronounced by interested persons, may be taken as a sure proof that they were never in reality so, and that no one could live within their inclosure without a dangerous risk to health and life.

The obvious conclusion from the fact that new structures are saturated with water which can only be got rid of by heat and air, is that it is necessary for thorough drying to submit them for a long time to an abundant supply of both. A constant and high degree of warmth through numerous fires, and a thorough ventilation by means of open doors and windows, must be kept up, and no one careful of his health should ever dwell in a new house until many months after its construction, during which these means for driving away its moisture have been industriously used.

Since buildings with walls of porous materials are the most readily permeable by air, and necessarily the best ventilated and easiest dried, it may be questioned whether the structures of iron and zinc now getting into vogue are as favourable to the health of their inhabitants as the old-fashioned ones of wood, brick, and stone. At any

rate, it does not admit of doubt that mechanical contrivances for ventilation are indispensable in the houses of metal, though perhaps not in those of other material.

Something can be done, perhaps, in the course of its construction, toward insuring a dry building by the various artifices of the builder, such as placing a layer of concrete under the whole under-surface and erecting a low wall of perforated brick around the base, with a space of a few inches left between them. These contrivances may guard against the absorption of fresh moisture from the ground, but will never discharge the water abounding in every new structure of masonry. This can only be effected by the persevering application of heat and air.

Night, Waking up in.—*See*
WAKING UP IN NIGHT.

Night-Gown.—The night-gown should be made long and full, and fashioned in such a manner that none of its parts can be so drawn as to constrict the body in the least during its movements in the insensibility of sleep. There should be no wristbands, in the ordinary sense, but the sleeves should be of great and nearly uniform width. The neck should be spacious, and not closed by buttons, and the bosom left free to open. The wearing of stockings, as is not uncommon, during sleep, is a pernicious practice. In fact, the body should be unhampered by any tight-fitting garment, and freed from all ties and ligatures, as, in its prostrate and comparatively inactive condition during slumber, its organs and circulation are rendered very liable to be deranged by the slightest pressure or constriction.

Nipples, Excoriated or Sore.—This troublesome and painful affection, in almost all instances, is met with during suckling, usually of the first child, and is due to irritation and ulceration of the delicate skin of the nipple. The mother

first notices one or more deep cracks, which are extremely tender, and bleed when touched. The skin around these cracks, fretted by the suction of the child's mouth and constantly bathed by milk and discharge, becomes inflamed and raw. In debilitated and unhealthy women, the inflammatory mischief extends deeply into the tissues of the affected nipple, and also to the skin covering the breast. When the nipple has become so tender that the mother is compelled to suckle the child almost entirely on the opposite and healthy side, the breast corresponding to the excoriated nipple is engorged with milk, and finally attacked with acute inflammation, which results in the development of a large mammary abscess.

The usual cause of sore nipples is the disregard of cleanliness and neglect on the part of the mother to keep the surfaces of the nipples dry. The tender cuticle covering these structures, is readily excoriated by the contact of fluids, and by the friction of moist and dirty linen. In most cases the affection is produced by the suckling of the first child, and never occurs again; but some mothers, in spite of their careful preparation of the nipples before lactation, and constant attention to those parts after the birth of the child, are troubled with painful cracks and all the inconveniences to which these give rise during every period of lactation.

Some mothers suffer from sore nipples in consequence of their allowing the child to retain the nipple in its mouth for too long a time. It is very probable that a diseased condition of the child's mouth may also be a cause of this irritation. In order to prevent sore nipples, the delicate skin should be hardened by the frequent application of diluted spirits of wine, weak lead lotion, or a lotion containing one drachm of alum to half a pint of water. A strong infusion of green tea, with the addition of about one-fourth of brandy or gin, will also be found a good astringent wash. The use of the lotion should be commenced early in the seventh month, and the nipples should be bathed night and morning. A bottle with

the mouth and neck just large enough to admit the nipple should be half filled with the astringent lotion and then be applied over the nipple and inverted, so that the lotion may fall down upon this organ, and bathe it at every part of its surface.

During suckling the nipples should be kept as dry as possible, and when not used be covered by cotton-wool, dusted with lycopodium or starch. When ulcers and cracks heal, and there is no inflammation of the surrounding skin, these should be lightly touched with a pointed crystal of blue-stone, but when the nipple is hot and tender, the application of caustic must be deferred until their irritation has been allayed by warm fomentations. When a considerable extent of skin both of the nipple and on the breast is red, raw and moist, the best local application will be a solution of five grains of lunar caustic in one ounce of water. This should be brushed over the affected parts every morning. After the application of any active or caustic agent to the nipple, the mother must take care to keep the child from the breast until all traces of the local remedy have disappeared.

Nitro Gargle.—See GARGLES.

Nitre, Sweet Spirit of.—See MEDICINES, HOME.

Nitrous Acid.—This acid is made by placing clean copper in nitric acid water; a colourless gas (nitrogen dioxide) is given off, and this, combining with the air, forms the red fumes of nitrous acid. It is a powerful agent for oxidizing organic matter. It rapidly removes the smell of the dead-house, but is extremely irritating and offensive; hence the room should be cleared of people while the deodorizing process is going on.

Noises and Ringing in Ear and Head.—There is no symptom, deafness alone excepted, more frequently complained of among aural patients than noises or ringing in the ears. All the forms of ear

disease already mentioned may produce ringing, hissing, etc., in the ear, and sometimes these noises seem to extend into the head. It is important for the reader to know that some of these noises in the ear are easily curable, while others are hard, or even impossible, to cure. Yet, in most cases, noises in the ear will in time cease.

It should be borne in mind, however, that noises in the ear, accompanied by hardness of hearing, are indicative of aural disease; but that those sounds in the ear, unattended with alteration of hearing, are due to some derangement of the system, most probably in the stomach, or in the nervous system. Noises in the ear always demand attention, especially if they become persistent. An ordinary passing ringing or cracking sound in the ear calls for no notice.

All subjective sounds can be treated only by the physician. It may be said that any attempts to cure these noises by putting drops in the ear will in all cases increase the noises. If the noise is due to the presence of a foreign body in the external ear, the removal of the offending matter will quell the noises, as ringing, singing, etc., which may have been perceived in the ear.

Noises in the Bowels.—"These are heard," says Dr. Lewis, in his "Talks on People's Stomachs," "mostly in ladies of sedentary habits. And I know of nothing more annoying. Sitting, it may be, in the company of gentlemen, in the midst of a brilliant conversation over 'La Son-nambula,' all at once, while the young lady indulges in raptures over some exquisite aria, a new strain is heard. All are instantly aware of its origin. Klug, klug, rumble, rumble, klug, klug. The young lady feels as though she should sink through the floor, but she is familiar with the queer music, and tries to drown it by more rapid speech and forced laughter.

"A cultured and most sensitive lady, whose rich imagination is familiar to the reading public, came to consult me about her 'intestinal concerts.' Within two months she came again to report a perfect

cure. I gave her no medicine; indeed, I did nothing for her. I simply told her one little secret. It is this. You have twenty feet of small intestine, which is, say, one inch in diameter. The contents of this tube are constantly moving onward. So long as the tube is the full size, the contents will move on, generally, without any noise; but if you squeeze a part of the tube and make it smaller than the remainder, when the liquid contents pass along, in crowding through this reduced part, sounds will be produced. Now that corset with the long bodice does that very thing. The pressure reduces the size of a part of the small intestine, and the contents, in crowding through that contracted part, get up the klug klug concert.

"Of course it will be understood that I have spoken of the pressure of the whale-bones as a cause of these intestinal noises, though this pressure is by no means the only cause. There are certain articles of food, as every one knows, which fill the bowels with gases. Excessive eating will likewise produce a turmoil. But these causes are much more likely to produce sounds in a fashionably-dressed lady than in a man, or in a woman who dresses in a simple and natural way.

"While water will pass through a pipe of a given size without sound, reduce the size at one point, and at that place, the water, in crowding through, will produce a gurgling. I have known persons to suffer from intestinal sounds on account of a false position in sitting, incident, perhaps, to some occupation.

"Pressure which checks the motions of the abdominal organs is likely to produce constipation. It is rare, very rare, indeed, to find a lady with a fashionable waist who is not troubled with constipation."

Nose, Foreign Bodies in.—The patient should take a full breath through the mouth, which, with the uninjured nostril, should then be held tight, and the patient told to breathe hard through the nose, a slap on the back being given at the

M. D.

same time. If this does not answer, and the obstruction is near the nostril, hold the nose above the object and hook the latter out with a bent hair-pin, or else take the patient to a doctor.

Nose, Organ of Smell.—The organ of smell is so placed above the mouth that, by it, the odour of whatever is put into the mouth must be immediately perceived—a very convenient arrangement. The visible portion of the nose is chiefly made up of bone at the upper part, or bridge as it is called, and of cartilage at the expansive nostrils. The internal portion of the organ consists of a cavity, which communicates with the throat, formed in the bones, which are expanded in such a manner as to offer a wide extent of the membrane, on which the nerves of smell are distributed, to the action of the air bearing the odoriferous particles.

Notes for Nurses.—See NURSES, NOTES FOR.

Nourishment, Calls for.—Hunger is the prayer of the body for nourishment. It may be appeased either by solid or liquid food; thirst is satisfied only by water, either alone or in combination with solids or other liquids.

The prayer of the body for nourishment should not ordinarily go long unanswered. If either positive or negative food is not speedily forthcoming, after the desire begins to be intensely felt, the system suffers.

One of the most terrible of deaths is that from starvation. But although the sufferings of the starving are very great, it is not so much hunger as debility and pains of various kinds that cause the suffering. A medical man who for two days was lost in a dense forest, without anything to eat, records that the sensation of hunger soon passed away, and an attack of nausea and vomiting resembling sea-sickness came on that compelled him to rest for several hours. This attack was followed by painful debility, but not by hunger.

Starvation from want of water must be a death even more terrible than that from want of solid food, for thirst, as we have already remarked, is a tyrant vastly more imperious and exacting than hunger. A fearful picture is drawn by Vambéry, of the agonies he bore in the Persian desert from want of water. A few days at most is as long as we can exist without some form of liquid or solid, positive or negative, food.

The stories that periodically arise of young girls who live for weeks and months without food may probably be explained partly by fraud and partly by ignorance. At any rate they do not, thus far, seem to bear rigid scrutiny.

Number of Hairs on Human Scalp.—*See* **HAIRS, SHEDDING OF.**

Number of Respirations.—*See* **RESPIRATIONS, NUMBER OF.**

Nurse, Dress of, in Sick Room. *See* **DRESS OF NURSE IN SICK ROOM.**

Nurse, Qualifications of.—With regard to these Dr. Wallace Anderson says:—"The qualifications of a nurse deserve and admit of a more definite arrangement than is generally given them. At least there is one that should always be placed first as the most essential and the foundation of all, viz., a love for the work, a devotion to it for its own sake. That must underlie, as it will embody, all the others. There may possibly be exceptions to this rule; but certainly, if your love for the work comes tardily, so will your success, and this will never come if that is altogether wanting. Understood in the proper sense, devotion to your work implies what is in itself another qualification of a nurse—a kind and loving heart. Many occupations can be carried on independently of such a gift, but not that of a nurse. That will shorten the weary hours of watching, lighten duties in themselves unpleasant, and make you bear with patience the fickle temper, or it may be the ungrateful heart.

Expressing itself on your countenance, it will be reflected on and caught up by those about you. It will quicken your ear to the cry of want or pain; it will lighten your footstep and soften your touch. This word "touch" brings us to another essential qualification, viz., tact. It is a quality not easily defined; but if we go back to its original meaning, we can construct a definition upon it. It means, literally, touch—the touch of skill and experience. But it has a wider significance—it includes the mental touch—something more complete than the other; not a touch merely, but a grasp—the grasp of the situation, the comprehension of a difficulty, the grasping of it on all sides so that it disappears in your hands. This is tact, and by it alone will you be able to meet the ever-recurring and ever-varying emergencies that beset your work. Patience, another important qualification, is, indeed, a virtue in a nurse. It will, doubtless, be the result of that devotion to your work to which I have referred; but often it will be sorely tried, even if you possess it as a special gift. In convalescence particularly, when the patient feels his weakness, and is more alive to the monotony of day succeeding day, is this most likely to be the case. When your ingenuity well-nigh fails you in providing some new entertainment for him, then comes the test of your patience. As to what may be termed the habits of a nurse, I would mention order first of all. That is simply having a place for everything, and everything in its place. There is no habit of more extended advantage to you than this. It is a great part of neatness, and, like it, looks well; but, what is of far greater importance, it enables you to act well. It may prevent many a serious error, or, it may be, a dangerous delay. Its cultivation generally will be the most wholesome discipline to yourself, and pave the way to other habits to which it directly tends. Punctuality is such another habit. It is just order with reference to time. If you delay the giving of a meal, then, when it is ready, the patient's appetite may be gone,

and that means strength gone and time lost. And the patient will be far more exacting on your attention. The body being weak, the mind is weakened too. He will fret over your delay, and magnify a few minutes into many."

Nursery, The Child's.—The influence of the dwelling upon the moral and physical well-being of men is admitted to be very great. It is more particularly the young who are affected by the influences of their habitual dwelling. The advanced in life are not only less susceptible, from the tougher structure and the diminished sensibility of maturity, but are not so constantly exposed, since they can withdraw themselves at their will, or by their daily pursuits are withdrawn from the habitation, while children, and especially infants, are necessarily more confined to it. There is no part of the house, consequently, which demands such scrupulous regard, as to its appropriateness for living, as the nursery. This term we use in the ordinary sense of an apartment for young children. It is occasionally made a sleeping place; this is objectionable, and its use should be restricted to its other obvious purposes.

The position of the nursery should be such as to give it as much sunlight as possible, which is not only essential to health, but a source of cheerfulness appreciated by none so much as the young child.

Nursery, The Child's, Furniture of.—The furniture should be as scanty as convenience will allow, and all sharp edges and projecting points studiously kept out of the way of young limbs. The floor must have no carpets, which are absorbent and retentive of impurities, and on the least agitation give rise to clouds of dust and floating flocks of wool, very irritating and injurious to the delicate lungs of children. The best for cleanliness and health is a floor painted or coated with beiled linseed-oil, from which any dirt or impurity of whatever kind can be instantly removed, and all moisture soon dried up. Rugs, which can

be readily moved and shaken free from dirt and dust, may be used when, in cold weather, additional warmth is required.

Nursery, The Child's, Toys in.

—The box or basket filled with toys is an indispensable requisite of all places where children may be confined for however short a time, and especially of the nursery, in which they spend so great a part of their early lives. The toy given to the child has not only the effect of a bone thrown to a growling cur—that of quieting him, though its power in this respect is very effective and beneficial: playthings are the first and most impressive teachers of childhood. They direct themselves to its natural instincts and its earliest developments with an inherent fitness that no didactic teaching, guided by the most subtle tact, can equal. They invite the touch, they attract the eye, they enforce movement, they awaken observation, they excite curiosity, and teach just what the child wants and is adapted to learn—form, colour, substance, and the simple relations of material things to each other and themselves. Parents, moreover, need not exercise their ingenuity or strain their generosity in supplying their children with what they require. The costly and artful toy gives neither the enjoyment nor the benefit of simple and inexpensive things.

We are no great believers in the benefits of didactic teaching of morals and religion to the very young, but it may not be amiss to keep before them a few sacred injunctions and well-accepted sayings, as "Honour thy father and thy mother," and "Cleanliness is next to godliness," etc., which, however, should be cheerfully printed in illuminated letters, and distributed tastefully about the room.

Children are not generally so inclined to self-destruction as the fears of their anxious parents lead them to believe. They have, ordinarily, at a very early age the instinct of life sufficiently strong to impress them with a sense of the necessity of taking a good deal of care of themselves. The liveliest baby is not always seeking to elude the

mother's grasp and dash its brains out on the hard floor, the most agile harlequin of a boy is not constantly on the look-out for the opportunity of leaping through the third-storey window and impaling himself upon the pikes of the iron railing below, and the most inflammably tempered girl not always ready for martyring herself by the side of the back log. Accidents, however, will happen; so it may be well to put nurse on her guard, to secure the windows with a triple row of iron or strong wooden bars, and to fence in the fireplace with a substantial fender.

As children are not only by nature noisy, but as it is essential to their health and full development of their strength to cry, to bawl, and to romp, they should be allowed to use their lungs, voices, and limbs to the fullest possible extent.—*See also* BEDROOM, THE CHILD'S.

Nursery, The Child's, Ventilation of.—The room should be large enough to admit of the freest movement of the young, for it is essential that the child should have full play for the use of all its limbs and muscles. Large extent of space, moreover, is necessary for the free circulation of air. While a goodly number of windows is desirable, reliance should not be placed upon these only for ventilation, though quite adequate for the purpose if discreetly used. In severe weather people are so apt to consider what may conduce to their temporary comfort and convenience in preference to that which is advantageous to their health, that they will, in order to avoid a puff of wind or a sprinkle of rain, deprive themselves of the pure breath of life. By means of movable ventilators fixed in the upper part of the room, or one of the higher panes of glass, there may be obtained a free supply of fresh air, and such a circulation secured as will prevent all stagnation of the atmosphere or retention of its impurities. Dangerous draughts, too, will thus be avoided.

The windows, however, whenever the weather permits, should be freely opened.

Mothers and nurses should learn by heart, and give practical effect to the lesson taught by this homely distich:

"If you open the windows more,
You will keep doctors from the door."

It has been calculated that all the blood in the body of an adult person, which amounts to nearly three gallons, passes through the lungs in the short period of two minutes and a half. It is by this rapid movement that it is acted upon constantly by the air which is breathed, and adapted to the purposes of the human economy. The blood thus running through the lungs, continues a course of equal speed throughout the whole frame, from the centre to the farthest extremity, from the heart to the tips of the toes and fingers. There is not the most minute and remote part of the animal structure which is not traversed by this rapid and perpetual current. The purpose of this ever-circulating movement is to expose the blood to the action of the air, in order that a change may be effected in it which is essential to health and life. This process can neither be performed, nor its ends attained in perfection, without a constant and abundant supply of pure air. The blood, however, will continue to circulate for a long time even when the lungs are breathing in a foul atmosphere. The activity of its movement, moreover, may not diminish, and thus the blood, polluted through breathing a noxious vapour, can diffuse throughout the whole human system, far and near, the poison it contains, in the short period of two minutes and a half! The lungs of children act, and their blood circulates with still greater rapidity, than those of grown-up people. No more need be said to impress upon the least judicious, the necessity of having not only pure air, but an unremitting supply of it, in the nursery.

Nursery, The Child's, Walls of.
—While a certain simplicity should characterize the nursery, it should be by no means entirely devoid of ornament. Painted or

coloured walls are preferable to papered ones, for their surface can be constantly cleansed and renewed as may be necessary in cases of contagion or other requirement. The colour of the painted walls should be of a warm tone. Coloured pictures of a striking and objective character, large and distinct representations of animals, etc., should be so hung on all sides as to attract the sight and animate the spirits of the little inhabitants of the nursery.

Nursery, The Child's, Warming of.—Infants and very young children, whose power of maintaining bodily heat is less than that of the adult, require more artificial warmth. Their natural activity is, however, so great that whenever not at rest, which they seldom are, the quickened action of the lungs and movement of the limbs of the young compensate somewhat for the lower temperature of their bodies. The nursery will hardly require, then, to be more warmed than the rest of the house, through which there should be diffused a general heat in winter, by means of the furnace, not lower than 60° or higher than 65° Fahrenheit. The open fireplace, which is regarded by many as so good a ventilator, may be useful for this purpose, and as a ready source of additional heat when required on special occasions.

Nurses, Hints to.—The following are some of the things nurses should never do to a young child:—Never pat it hard. Never trot it violently, bringing the heel down with force. Never make startling noises by way of amusing it. Never toss or jump it about. Never swing it quickly, either in a cradle or rocking-chair. Never give it an empty feeding-bottle to suck, or a rag, or any such thing. Do not put your fingers in its mouth. Do not, in feeding a young child, try to make it eat by first putting the spoon in your own mouth. Do not blow the food to cool it; the breath is often impure, and will make the food injurious to the child. Never roll the towel up into hard knots, or twist it round a pin, to poke

at the baby's ears or nostrils, with the idea of making them clean. Great injury is done in this way. Never try to wash farther than you can see, and always use the softest cloth. In bathing a child, never let the water run into its ears by putting its head too low in the tub. Never on any account tickle a child.

Having given a summary of things which nurses should not do to a young child, it may be as well to point out two things which they should invariably do:—In general, keep it as sweet and clean and placid as possible. Keep it from sucking its thumbs, as this is a bad habit that grows on a child, and often tends to bring the teeth out of place.

Nurses, Notes for.—1. Great care in frequently changing and airing the clothing will aid in making a nurse personally acceptable. A few drops of hartshorn in the water used for washing will remove disagreeable odours from warmth and perspiration. A daily morning bath will be very refreshing, and can be easily accomplished with simply a basin and towel, in the following manner:—Wring out a rough cloth in soap and water, and rub yourself briskly from head to foot; five minutes will suffice each day, and help in keeping you healthy, fresh, and pleasant to look at.

2. A few drops of glycerine, rubbed in at night, will keep the hands smooth, and in good order, if care be taken to wipe them perfectly dry each time that they are put in water; hot water is thought better than warm or cold for the hands. Cultivate a light touch. A sensitive patient is often disturbed even by the weight of the hand, or by moist, clammy hands.

3. While the nurse should be faithful and conscientious in the discharge of her duty to her patients, she should not forget that her own health demands that she should observe all possible hygienic regulations.

4. It is important that the nurse have regular meals and regular sleep. As a rule, she should sleep seven or eight hours out of twenty-four. A cold bath in the morning

is chiefly desirable for its tonic effect, the warm bath in the evening being recommended for cleansing purposes. With few exceptions, some portion of every day should be spent in the open air.

Nurses are apt to get careless about these matters, partly because of the frequent difficulty attending their observation; and when the health begins to suffer, they resort to the use of stimulants, hoping to keep up the strength by the use of strong tea and coffee, or alcoholic stimulants. This course is one which is most injurious to the health. Let the nurse but realize this, and she will find that, with a little management, she will usually be able to follow the above simple rules of hygiene.

Nursing.—It is plainly a part of every mother's duty to bring up her child at the breast, unless, of course, there are obstacles in the way which prevent her doing so. That the breast was intended by nature to be the fountain of nourishment for a certain period of every animal's existence, cannot be doubted after the most superficial study of the habits of the lower animals; and while creatures by nature fierce and cruel do not forego what instinct tells them to be a part of their duty to their young, shall woman, with her infinitely superior capacities of knowing, act differently? If, however, a woman undertake the duties of nurse, she must not do so to suit her own convenience.

The only consideration that ought to weigh with her should be the welfare of her child; and if she enter upon her duties with the notion that she may continue them or give them up just as it may prove convenient to her, or with the intention of only giving her child the breast at such times as she may find it suitable, without interfering with her pleasure or society, she had better not undertake the duty at all. There are, however, many women who are not sufficiently alive to their duty in this respect. They either fail to perceive the evident design of nature in regard to it, or they close their eyes to the fact.

Nursing, First Stage.—With reference to nursing during the first few days, it is frequently noticed in those who have already borne children, that towards the close of pregnancy the breasts begin to enlarge very considerably, become swollen, and often contain milk. Usually, however, the milk does not make its appearance till the second or third day, especially in first cases. Its appearance in the breasts generally gives rise to some constitutional disturbance, causing slight chills, feverishness, etc., which symptoms, however, speedily pass off. The breasts enlarge and become knotty to the feel, and blue veins are seen to traverse the surface. The nipples become erect, and pain and uneasiness are experienced by the mother, the pain sometimes passing up towards the armpits. All these uncomfortable symptoms speedily pass away on the milk, which is secreted, being drawn off by the child.

The first milk which is secreted is darker than that which follows it. In colour it is yellowish. It is called colostrum, and is supposed to have a purgative effect upon the child. In the case of those who have not already borne children, and those in whose breasts the milk has not begun to be secreted towards the close of pregnancy, it would be unwise to put the child too frequently to the breast, because if it is frequently put to the breast and receives nothing, the child at last becomes disappointed, and may afterwards refuse to take the breast at all. In attending to this, however, the opposite extreme of not putting the infant to the breast even once during the first day or two must be avoided, inasmuch as the occasional application of the child to the breast exercises a stimulating influence upon it, and by increasing the quantity of blood which flows to it, tends to hasten the "draught," as the secretion of milk in quantity by the breast is called.

In the case of those, then, who have not borne children already, and in those in whom the milk has not yet made its appearance in the breasts, the child should be applied not more frequently than once every

six hours, and in order to satisfy its hunger till the milk appear, a little ass's milk may be given it; or what is of more general employment, because more within the reach of all, a little cow's milk, diluted with boiling water, and slightly sweetened with loaf sugar.

Nursing, Second Stage.—In nursing during the first month, when the milk has come to the breasts, all artificial nourishment must cease, and the child be put to the breast regularly. It is now that so many mistakes are made; that so many bad habits are formed; now that the health of the child frequently begins to suffer, and derangements of the stomach are so often met with.

When the first few days of the infant's life are over, regularity in feeding must be observed, otherwise the health of both parent and child will alike suffer. The frequency with which the child should be put to the breast during the first month should be once every two hours during the day, and once every three or four hours during the night. To attend to this from the very first is absolutely necessary, as a mother's rest should be as undisturbed as possible. When this is neglected and her nights are disturbed, her health will become impaired; the milk will deteriorate in quality, and the child will be badly nourished and suffer in consequence.

The best time to give the child the breast is when it awakes out of sleep, and on its hunger being appeased, it will generally again fall asleep without further trouble. The practice which some have of allowing the child to fall asleep with the nipple in its mouth before putting it into his cot is one to be avoided. A practice of this kind very soon becomes a habit with the child, and the mother herself may be astonished to find how great a hold it has taken upon it, and how difficult is the task, even in a short time, of getting the child to fall asleep without the nipple in its mouth.

Nursing, Third Stage.—With regard to nursing from the first month till

the appearance of the teeth, that regularity in nursing which was spoken of as necessary to establish during the first month must now be maintained in all its strictness. The frequency, however, with which the child is fed need not now be so great as up to this time it has been.

During the day the breast should not be given more frequently than once every two and a half or three hours, and during the night it should not be given oftener than once every three or four hours. As the child grows older, the time which is allowed to intervene between each meal should be increased. If such directions as those which have been given are attended to, it will soon be found that the child will sleep four or five hours without awaking, and the mother will thus be enabled to obtain that amount of sleep which is so necessary for her at this time; but if, instead, her nights are broken and disturbed, she will speedily suffer in health.

Till the appearance of the first, or milk teeth, the child should be fed exclusively upon the breast milk; after that, which is nature's indication that the stomach has become fit to digest other substances, the child may be given rusks, tops and bottoms, a little of Hard's farinaceous food, Chapman's entire wheat, or Robinson's groats. It may be that several of these may have to be tried ere one is found that will agree with the child, but when one that is suitable has been got, it should be at once adopted, and should not be readily given up.

Nursing of Sick Children.—

Much of what is said in this volume on the subject of sick nursing is applicable to the proper management of children during the times of sickness. There are, however, certain peculiarities arising from the age, the growth, and the diseases to which childhood is liable, which call for a few special remarks, which, for convenience sake, are distributed under the headings, DISEASE, SIGNS OF, IN CHILDREN; MEDICINE, ADMINISTERING OF, TO CHILDREN; and MEDICINES, INCAUTIOUS USE OF: which see.

Nutmeg.—This is a moderately warm and grateful spice, and is supposed to be particularly useful in weakness of the stomach and loss of appetite. It is liable, however, when taken in any quantity, to sit uneasily on the stomach, and it frequently affects the head. If, however, it is roasted in a gentle heat till it becomes quite friable, it proves less subject to these inconveniences. The mace, or outer covering of it, has a pleasant aromatic smell, and warm, bitterish, aromatic taste. It is in common use as a grateful spice, and appears to be, in its general qualities, very much like the

nutmeg; the greatest difference consisting in its being more bitter and less unctuous, and better suited for weak stomachs. (*See* MACE.) Nutmeg should be used with caution by persons of paralytic or apoplectic habit.

Nutritive Value of Foods (*Lat. nutritus*, nourished; from *nutrio*, I nourish).—The following comparative table of the nutritive value of foods, according to Dr. Letheby, will be found useful in selecting the best kinds of food under various circumstances, and will doubtless be read with interest and frequently consulted:—

SUBSTANCES, 100 parts.	Water.	Fibrine, Albumen, etc.	Starch, Sugar, etc.	Fat.	Salts.	Carboniferous.	Nitrogenous.	Total Nutrient.
Human Milk . . .	89	3.5	4.2	3.0	0.2	11.4	3.5	14.9
Cow's Milk . . .	86	4.5	5.0	4.1	0.7	14.8	4.5	19.3
Skimmed Milk . .	87	4.5	5.0	2.7	0.7	11.5	4.5	16.0
Butter Milk . . .	87	4.5	5.0	0.5	0.7	6.0	4.5	10.5
Beef and Mutton .	73	19.0	—	5.0	2.0	12.0	19.0	31.0
Veal	77	19.0	—	1.0	0.6	2.4	19.0	21.4
Poultry	74	21.0	—	3.0	1.2	7.2	21.0	23.2
Bacon	20	0.8	—	70.0	1.3	168.0	0.8	168.8
Cheese (Cheddar) .	36	29.0	—	30.0	4.5	72.0	29.0	101.0
„ (Skimmed) . .	44	45.0	—	6.0	5.0	14.4	45.0	69.4
Butter	15	—	—	83.0	2.0	199.0	—	199.0
Eggs	74	14.0	—	10.5	1.5	25.0	14.0	39.0
White of Egg . . .	78	20.0	—	—	1.6	—	20.0	20.0
Yolk of Egg . . .	52	16.0	—	30.0	1.3	72.0	16.0	88.0
White Fish . . .	78	18.0	—	3.0	1.2	2.4	19.0	21.4
Salmon	78	17.0	—	4.0	1.4	9.6	17.0	26.6
Eel	80	10.0	—	8.0	1.3	19.2	10.0	29.2
Wheat Flour . . .	15	11.0	70.0	2.0	1.7	74.8	11.0	85.8
Barley-meal . . .	15	10.0	70.0	2.4	2.0	75.8	10.0	85.8
Oat-meal	15	12.6	62.0	6.0	3.0	76.4	12.0	88.4
Rye-meal	15	9.0	66.0	2.0	1.8	70.8	9.0	79.8
Indian-meal . . .	14	9.0	65.0	8.0	1.7	84.2	9.0	93.2
Rice	14	7.0	76.0	0.3	0.3	76.7	7.0	83.7
Haricot	19	23.0	45.0	3.0	3.6	52.2	23.0	75.2
Peas	13	22.0	58.0	2.0	3.0	62.8	22.0	84.8
Beans	14	24.0	44.0	1.4	3.6	47.4	24.0	71.4
Lentils	14	29.0	44.0	1.5	2.3	47.6	29.0	76.6
Wheat Bread . . .	44	9.0	49.0	1.0	2.3	51.4	9.0	60.4
Rye Bread	48	5.0	46.0	1.0	1.4	48.4	5.3	53.7
Potatoes	74	2.0	23.0	0.2	0.7	23.5	2.0	25.5
Green Vegetables .	86	2.0	4.0	0.5	0.7	5.0	2.0	7.0
Arrow-roots . . .	18	—	82.0	—	—	82.0	—	82.0

In this table the carboniferous matter is calculated as starch; 10 of fat being equal to 24 of starch.

Nuts, Brazil.—The Brazil nuts which are brought to this country from the New World contain large quantities of oil. They are the produce of a plant called *Bertholletia excelsa*. The seeds are contained in a hard wooden fruit which is so large and hard in some species of the same family as to give them the name of cannon-ball trees.

Nuts, Oily.—Oily nuts belong to both the classes of grains and pulses; they are of the same nature with the farinaceous seeds, but hold a considerable quantity of oil in their composition, and this oil is not, as in the pulses, intimately mixed, but can be easily made to separate. In what manner it exists in the seed, before expression, is not very clear. These nuts, or kernels, are exceedingly nutritious, in a proportion greater than any of the farinaceous seeds, and, therefore, they properly form a part of diet. The nourishment they afford is always greatest in their mature state, as then their greatest quantity of oil is evolved. The chief difficulty in the use of nuts as food is their difficulty of solution by the stomach. All oily matters resist fermentation, and therefore the process of digestion, and to counteract this, their mixture with acids is necessary, either previously provided in the stomach or used along with them. But as this oil in the nuts is not in a separate state before going into the stomach, it cannot receive this mixture previous to being taken, and when taken it requires much time to produce its separation from the other parts with which it is involved. Hence, the nuts cannot fail to be a hard, indissoluble nourishment. This oil, also, when separated, is apt to turn acrid and rancid on the stomach, and to occasion heartburn. They should therefore, as a proper precaution, be eaten only when fresh, and their skin, which is very astringent and unwholesome, should be carefully removed. In eating, they should be well chewed to favour their digestion, and they should be sprinkled with salt, by which they are formed into a soapy mass and rendered

miscible with the fluids. In no case should they be eaten in quantity, as alarming complaints have been known to be produced by them, particularly of the stomach and bowels; and they have been also alleged to occasion difficult breathing and asthma. The best form of using them is when made into puddings and emulsions, their tenacity being in some measure broken by the sugar.

Oak Bark, Decoction of.—See DECOCTIONS.

Oatmeal.—Oatmeal deserves to be much more used than it is in the form of porridge. This is made, as most people are now aware, by gradually stirring oatmeal into boiling water, until enough has been added to give the required degree of consistency—continuing the boiling for at least half an hour, until the meal is sufficiently cooked. It is commonly eaten with milk. This is usually a very unirritating kind of food, an article of diet which is well adapted to the case of children, and little less so to that of dyspeptics; and for the labouring population it forms a breakfast that is much more nourishing and wholesome than tea and bread and butter. Bread and milk, although certainly well suited to the stomachs of most children, is, nevertheless found to disagree with some; and as a general breakfast for children, oatmeal porridge and milk deserves to be preferred. It is an unstimulating diet; it is very easily digested; it contains a very considerable proportion of nutriment; and it seems usually to act slightly on the alvine excretions—while in many cases a continued use of milk renders it necessary to take an occasional dose of aperient medicine.

A fresh sample of Scotch oatmeal, on analysis, exhibited the following result:—

	In 100 parts.	In 1lb. oz.	In 1lb. grs.
Water	5.0	0	352
Fibrin, etc.	16.3	2	252
Starch, etc.	63.0	10	351
Fat.	10.1	1	268
Cellulose and lignose. . .	3.4	0	259
Mineral matter, . . .	2.2	0	147

Oatmeal and Water.—By far the best drink for heavy work is a quarter of a pound of oatmeal, well boiled in two or three quarts of water, with an ounce or an ounce and a half of sugar added.

Oatmeal Gruel.—Take two or three tablespoonfuls of oatmeal, and rub it in a basin with a little cold water. Repeat the process, each time adding fresh water, until all milkiness ceases to be communicated to the water. Put now the washings into a pan, and boil till a thick mucilage is formed. These gruels contain more nourishment than sago, arrowroot, tapioca, etc., as they contain, besides starch, a small quantity of gluten. Sweeten to taste, and mix with milk if preferred. Butter and honey are sometimes added to them, but, as these are apt to derange the stomach, they had better be done without. Besides being used as articles of diet, these gruels are frequently employed as vehicles in which to administer substances when given in the form of clyster.

Oatmeal Porridge.—Into water that is kept boiling sprinkle from time to time a small quantity of oatmeal, stirring constantly while so doing, until a moderately consistent mixture is formed. Continue to boil, after adding the meal, for half an hour. This, taken with milk, forms a very good article of diet during early convalescence.

Oatmeal Porridge, Dr. Pavy's Recipe for.—"Mix a large tablespoonful of oatmeal with two tablespoonfuls of cold water, stir well to bring to a state of uniformity, and pour into a pint of boiling water in a saucepan. Boil and stir well for ten minutes. Flavour either with salt or sugar, as preferred. Milk may be used instead of water, or the boiling may be continued for half an hour, and the porridge turned out into a soup plate and cold milk poured over it. Thus prepared, the porridge sets and acquires a solid consistence, and the milk and the porridge are mixed

together little by little as they are eaten, with a spoon. If the coarse Scotch oatmeal is used—and this is generally the best—two tablespoonfuls may be sprinkled into a pint of boiling water, and stirred and boiled for half an hour. At the end of this time the oatmeal is sufficiently cooked, but many allow the porridge to continue simmering for two or three hours. It may be turned out into a soup plate, and eaten with milk in the manner above mentioned."

Oats.—Oats are a grain of a nourishing kind, and form the chief food of the lower classes of the northern parts of the island. They contain a considerable quantity of mucilage more than the other grains, and are therefore preferred for making gruel and other demulcent drinks for patients. They have been accused as possessing in their nature a heating quality, and giving origin to cutaneous complaints; but this assertion is unfounded, for such complaints are more the effect of climate and external situation than of articles of diet. Hence, they are frequent in every situation where cold and moisture are prevalent, independent of any article of diet used. Oats form a proper food for children and in the early part of life. They are seldom made into bread but with a mixture of other grain.

"A late author," says Dr. Reece, alluding to Dr. Johnson, "a man of learning, but the dupe of prejudice, has, by a ridiculous definition, endeavoured to represent oats as proper food for horses only. I wish the horses in England devoured a smaller quantity of that grain, and the people more. Few things would have a greater tendency to lessen the expense of living. The oats in North Britain are of a superior quality, and I hope the people will long have the sense to use them as an article of diet."

Observation in Sick Room (*Lat. observo*, I take note of; from *ob*, intensive; *servo*, I keep, or watch).—There is, perhaps, no habit so little cultivated by those who have charge of the sick as the habit of observation. Attendants and

friends alike fail in the exercise of it, and much information that would be of value to the physician is thus lost.

All ambiguous language should be avoided in reporting to a medical man upon the condition of a patient, and guessing at the truth must never be attempted. When information upon any point is asked for, only that which is definite is desired, and that alone should be given. A physician would far rather have the nurse or attendant acknowledge ignorance in regard to what is asked than that attempts be made to answer his questions which can only prove misleading. If the information thus supplied should be misleading rather than guiding in its nature, the patient may suffer in consequence. A careful habit of observation on the part of those in attendance upon the sick cannot be too highly estimated, nor its culture too strongly recommended, while its absence must always be deplored.

It is most desirable to note with exactness in every case, the Food taken by the patient, his Sleep and Appearance on Awakening from Sleep, his Respiration, Pulse, Temperature, Cough, Evacuations, Urine, Temperament, Fever, etc., all of which headings *see*.

Besides these observations, there are other things which should be noted and reported to the physician at his visits. Thus, if a patient is suffering from a cough, the frequency of the paroxysms should be noted; the time of their occurrence, whether during the early part of the night or towards morning; their duration, whether a few minutes or half an hour; also the appearance of the patient during the continuance of the paroxysms. In whooping-cough the face becomes congested and of a purply hue during the paroxysm; while in consumption it remains pale, and is bathed in perspiration.

The character of the cough should also be observed. In croup it is hard, barking, and has a peculiar metallic ring about it, whereas in bronchitis it is softer. No less important is it to observe the appearance

of what has been expectorated. Much valuable information is to be derived from a careful examination of the sputum, and the preservation of it for the physician's inspections should never be neglected. In pneumonia, or inflammation of the lungs, the sputum has a rusty appearance; in pleurisy it is frothy; in bronchitis it consists of viscid mucus; while in consumption it is streaked with blood.

As the evacuations from the bowels frequently afford much information in connection with a case, they should be preserved for inspection. It is also very necessary to preserve a quantity of the patient's urine, as this also often throws light on a case. The physiognomy of disease is often spoken of; and, if carefully studied, may be of much value; those who are in attendance upon the sick should strive to make themselves familiar with its varied manifestations as these come under their observation.

There are also peculiarities of temperament, a correct knowledge of which, on the part of the nurse or attendant, may save the patient much annoyance. As these differ in individual cases, a careful study of each is necessary to make one familiar with them; but when this has been done, much may be achieved in the way of avoiding those things which are known to be sources of irritation to a patient, and rendering his illness much more bearable than it would otherwise be. It is a well-known fact that many superstitions are the result of bad observation, and that bad observers are almost all superstitious; hence the necessity there is for the cultivation of correct habits of observation on the part of those in attendance upon the sick. Without this, serious changes in the patient's condition may be allowed to pass unnoticed, and much harm result in consequence.

During the progress of disease it is important that the nurse or attendant should be able to recognise those symptoms which denote recovery and those which denote the reverse; and yet there are few who are able to distinguish between the one

and the other. After many fevers recovery is slow, and it may be long before the patient is able to stand on being taken out of bed; and yet, if his appetite return, and if he begin to take food with greater relish, he may be looked upon as progressing. Again, if a patient who was able to stand or to sit up in bed is unable to do so any longer, although, in other respects, little alteration may be noticed in his condition, he is undoubtedly becoming weaker. These changes, especially in chronic cases, are frequently allowed to pass by unnoticed, and the end often comes unexpectedly, when more careful observation might have warned the friends of its approach.

The work of the physician would be greatly augmented and facilitated if, in every sick-room a chart were kept to record facts—especially such as have been indicated—in connection with each case. The more important to note, if such a method should be adopted, are those connected with the pulse, which ought to be recorded regularly night and morning; also the number of respirations, and any peculiarity that may be observed in connection with the breathing. Observations in connection with food and sleep are also most important.

The amount of fever may be roughly estimated by means of the hand. True observations in regard to this can only be made by employing the thermometer; but as this requires skill for its proper application, it had better be left in the hands of the physician. If a record such as this were kept, the medical man would be able to see at a glance the condition of his patient during the time that elapsed between each visit; and, by the information thus obtained, added to the facts which he himself had observed, would be enabled to judge more definitely of the real progress of the case.

The value of adopting such a plan will be more apparent when it is considered what effect the doctor's visit frequently has upon him. How often, for example, when his footstep is heard on the stair, does the patient become flushed and excited, and his

pulse quicken! and, unless the physician can remain till all excitement has passed away, how easily may he take away an erroneous impression with regard to the case! In order that the facts recorded by those who have the care of the sick may be of value, the observations must be made methodically and shown to the physician at each visit.

In all cases of serious illness, whether a trained nurse can be secured or not, there must always be some one person in the family who can be responsible for the patient, and to the physician. Two or three different persons taking orders and reporting symptoms will invariably make confusion and mistakes. There must be one head.

Occasional Nap.—See NAP, OCCASIONAL.

Occupation in Old Age.—It is of great importance in the management of the health in old age to have the mind pleasantly occupied. The company of children is always grateful to the aged, and seems to exert a healthful influence upon them. Among the ancients it was regarded as a means of prolonging life. The aged enter into the joys and happiness of children in a remarkable degree; they enjoy their sports and take part in their games with great heartiness, and this should always be encouraged. Another thing that appears to afford much pleasure to the aged is the planning and erecting of various structures, such as hot-houses, the laying-out of their grounds, and the superintending of any improvements that may be going on.

It is quite a foolish notion that the period of old age is not one to be desired, that it is a time of much weariness both of mind and body, and devoid of all enjoyment. If attention has been paid to the health during youth and adult life, so that old age is reached in comparative strength and vigour, there will be much enjoyment in these latter years of life. The consciousness of a life well spent is a fruitful source of com.

fort, and the power of advising those who are younger from the vast experience of a lifetime may be fraught with much good.

Occupations, Duration of Life in Various.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Occupations, Sedentary.—See SEDENTARY OCCUPATIONS.

Odours, Diffusion of.—See SENSE OF SMELL.

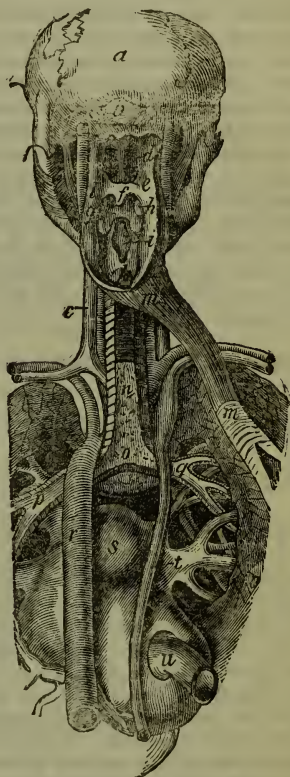
Odours, Perception of.—"In few things," remarks Mr. G. H. Lewes, "do human beings differ more widely than in their sense of smell. Not only is the acuteness of this sense markedly different in different men, but, in twenty men having average susceptibility, perhaps no two will be found to agree in considering the same odours agreeable. Musk is notoriously very offensive to many persons; others do not like mignonette; some do not recognise any odour at all in a flower considered very odorous by others. The *Iris Persica* was found by Turner to have a pleasant odour by forty out of fifty-four persons, a disagreeable odour by one, and very little scent by four others. Of thirty persons, twenty-three held the *Anemone nemorosa* agreeable in its perfume, and the other seven did not think that it smelled at all.

"Humboldt, whose authority renders credible what might otherwise seem questionable, declares that the Peruvian Indians can, in the dark, distinguish by the smell the different races, European, American, Indian, or Negro."

Œdema.—See DROPSY.

Œsophagus, or Esophagus (*Gr.* *oisoph'agos*, the gullet; from *olio*, I bear or carry, and *phago*, I eat).—The œsophagus, or meat-pipe, about nine inches in length, is the tube which passes the food down from the pharynx to the stomach. When food passes from the throat into the gullet, it is carried by the wave-like action of that tube

into the stomach. Some may think this a mere mechanical action, but it is not so; that is, the food does not drop into the stomach as it might into a bag by means of its own weight, but is conveyed thither by the muscular movements of the œsophagus



VIEW OF THE ŒSOPHAGUS, ETC.

or gullet, by the same power by which water is carried upwards through the gullet of the drinking cow or horse; but, indeed, we ourselves sometimes imitate these animals when we stoop down to drink from a stream.

In the accompanying illustration we have a view of the œsophagus, the pharyngeal

opening into the larynx, and the posterior surface of the trachea. In this figure the skull has been sawn through at the basilar process, and the vertebral column, along with the back wall of the chest, has been removed:—*a*, the interior of the skull; *b*, the basilar process; *c*, the internal carotid artery and internal jugular vein; *d*, the posterior nares; *e*, the palate; *f*, the uvula; *g*, the base of the tongue in the buccal aperture above the epiglottis; *h*, the tonsil lying between the anterior and posterior pillars of the fauces; *i*, the epiglottis; *k*, the cricoid cartilage; *l*, the side wall of the pharynx; *m*, the œsophagus; *n*, the trachea dividing at *o* into the right and left bronchi; *r*, the aorta; *t*, the azygos vein; *u*, the inferior vena cava, opening into the lower part of the right auricle; *s*, the pericardium covering the heart; *p* and *q*, the right and left bronchi.

Office of Perspiration.—See PER-
SPIRATION, OFFICE OF.

Oil Enema.—See ENEMAS.

Oily Nuts.—See NUTS, OILY.

Ointments (*Lat.* unguentum; from ungo, I smear).—These are forms of remedies in which the active substance is wrought up with lard, or some similar fatty substance, which, being smeared on the skin or raw surface, keeps the part moist and prevents evaporation. Formerly a distinct kind of ointments, called cerates, was employed; in these a considerable quantity of wax was mixed up with the other ingredients so that their substance was harder and firmer than those of ordinary ointments. The name is now done away with, but the substance remains, for a good many of the ordinary ointments contain wax, and are essentially cerates. Ointments have been long in favour as applications to wounded surfaces, and doubtless in many cases they do well; but in certain instances, especially when the discharges tend to decompose, they do harm; the fats break up and the fatty

acids are set free, and so the application becomes a curse rather than a blessing. The same untoward results follow the use of a single application of ointment too long.

1. *Ointment of Galls.*—Take of galls in fine powder eighty grains: benzonated lard an ounce; mix; or take of galls in fine powder two drachms; camphor half a drachm; lard an ounce; mix. Either of these ointments will be found useful as an external application to piles when the inflammatory stage has subsided. When the pain is severe, the addition of a little powdered opium will render this ointment more efficacious.

2. *Oxide of Zinc Ointment.*—Take of oxide of zinc two drachms and two scruples, benzonated lard two ounces. Add the oxide of zinc to the benzonated lard, previously melted with a gentle heat, and stir the mixture constantly while it cools. This ointment is very useful in many skin diseases, particularly eczema. Useful also in sore nipples, excoriations, and bed sores.

3. *Saturnine Ointment.*—Take of acetate of lead in powder two drachms; white wax two ounces; olive oil half a pint. Melt the wax in seven fluid ounces of the oil, then add gradually the acetate of lead separately, rubbed down with the remaining oil, and stir with a wooden spatula until they be thoroughly incorporated. This is an excellent cooling cerate for burns, excoriations; and other inflamed sores. Renew night and morning.

4. *Sulphur Ointment.*—Take of sublimated sulphur three ounces; perfumed lard half a pound; essential oil of bergamot twenty drops; mix. This is a specific for itch. Rub on the body every night till the disease is cured.

5. *Turner's Cerate.*—Take of prepared calamine, yellow wax, of each two ounces; olive oil, five ounces. Mix the oil with the melted wax; then remove the mixture from the fire, and as soon as it begins to thicken, add the calamine, stirring constantly until it is cold. This is a cooling, drying cerate, very useful in excoriations, simple ulcers, and burns after the inflammation is abated.

Old Age and How to Enjoy it.

—It has been a matter of surprise to thinking men of all ages of the world that the approach of death should be shrunk from by old people almost as shudderingly as by those in youth or in the prime of life. Such, however, as every-day experience teaches us, is not unfrequently the case, and a large majority of mankind hold the same view as that entertained by the aged but witty Frenchwoman, who sent for her physician on one occasion, and, in reply to her catalogue of ills, was met by the exclamation, "What would you have, madam? I cannot make you young again!" "I know that, doctor," answered she; "what I want you to do is to *help me to grow old a while longer.*"

Sir Edward Coke being very infirm in body, a friend of his sent him two or three doctors to regulate his health, whom he told that he had never taken physic since he was born, and would not now begin, and that he had now upon him a disease which not all the drugs of Asia, the gold of Africa, the silver of America, nor all the doctors of Europe could cure—*old age.*

Elderly readers who are not yet tired of life, and who desire to *grow old* comfortably for some years more, should consider the symptoms of bodily decay, in the order in which they are apt to make their onset, and how to diminish their interference with the powers of life and their disturbances of health. In order to help them in doing this, reference should be made to EPOCHS OF LIFE; PERIODS OF LIFE; TEETH, DECAY OF, etc.

Old Age a Relative Term.—See AGE, OLD, A RELATIVE TERM.

Old Sight.—See PRESBYOPIA.

Old Sight, Glasses for.—See SPECTACLES.

Oleaginous Foods (*Lat. oleaginus, oily; from oleum, oil*).—Oleaginous foods are those which consist principally of

oils, butter, fats or lards. These foods are not generally eaten alone, but are added to starchy diets. The action of oils on the system is principally to maintain animal heat and force, and, practically, they are most largely eaten by those who do the largest amount of work. They not only act in this way, but they also assist in the digestion and assimilation of other foods. It is on this account that cod-liver oil, pancreatic emulsion, and butter, cream, and fat, have been recommended as articles of diet in cases of consumption, scrofula, and other wasting diseases of the body.

Olive Oil.—The oil extracted from olives, known as olive oil, is, on the Continent, in great request, more dishes apparently being prepared with it than without it. With us it is principally used in mixing a salad, and when thus employed, it tends to prevent fermentation, and is an antidote to flatulency.

Olives.—To the Italian Shepherd bread and olives with a little wine form a nourishing diet; but in England olives are usually introduced only by way of dessert to destroy the taste of the viands which have been previously eaten, that the flavour of the wines may be the better enjoyed. There are three kinds of olives imported into London—the French, Spanish, and Italian: the first are from Provence, and are generally accounted excellent; the second are larger, but more bitter; and the last are from Lucca, and are most esteemed. A liking for olives is reputed to be, and in most persons probably is, an acquired taste.

Onion.—Onions contain nourishment, and, in the opinion of some, are superior to any other vegetable. Raw onions are usually disagreeable to a delicate stomach. Four pounds of onions contain one pound of gluten, which is the most nutritious element in wheat. The leek, garlic, and shallot are very similar to the onion.

Onions are best suited to persons of a cold and phlegmatic habit, and those whose stomachs require a stimulus.

"The onion," says Professor Johnston, in his work on "The Chemistry of Common Life," "is worthy of notice as an extensive article of consumption in this country. It is largely cultivated at home, and is imported in large quantities from Spain and Portugal. But it rises in importance when we consider that in these latter countries it forms one of the common and universal supports of life. It is interesting, therefore, to know that in addition to the peculiar flavour which first recommends it, the onion is remarkably nutritious. According to my analyses, the dried onion root contains from twenty-five to thirty per cent. of gluten. It ranks in this respect with the nutritious pea and the *gram* of the East. It is not merely as a relish, therefore, that the way-faring Spaniard eats his onion with his humble crust of bread, as he sits by the refreshing spring: it is because experience has long proved that, like the cheese of the English labourer, it helps to sustain his strength also, and adds—beyond what its bulk would suggest—to the amount of nourishment which his simple meal supplies."

Onion, Origin of the.—This vegetable is thought to have originally come from India, through Egypt, where it became an object of worship. Thence it was transmitted to Greece, thence to Italy, and ultimately it was distributed throughout Europe, in almost every part of which it has, from time immemorial, been cultivated. In warm climates it is found to be less acrid and much sweeter than in colder latitudes; and in Spain it is not at all unusual to see a peasant munching an onion, as an Englishman would an apple. Spanish onions, which are imported to this country during the winter months, are, when properly roasted, perfectly sweet, and equal to many preserves.

Operatives in Mills, Duration of Life in.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Ophthalmia, Catarrhal (*Gr. ophthalmos*, eye; *Lat. catarrhus*; from *Gr. kata*, down; *rheo*, I flow).—The most common disease of the eye is inflammation of the conjunctiva. Its simplest form is the catarrhal, in which the mucous membrane of the eye is affected in the same way as that of the throat and nose, and often at the same time. As the membrane is continuous with that of the nose and throat, its diseases may be so too, as in the case of influenza. It usually yields readily to rest and simple treatment, but if not checked may run into the purulent form, or may become chronic, and end in the condition known as *granular lids*. The latter is a very tedious and obstinate complaint, and is well known and much dreaded by patients who frequent hospitals and dispensaries.

Ophthalmia, Purulent.—Purulent ophthalmia differs from catarrhal ophthalmia, principally in degree, and it is sometimes difficult to draw the line where the one ends and the other begins. The discharge, which is thick and yellowish, and, in bad cases, very copious, is undoubtedly and virulently contagious. Whole families are sometimes inoculated by the discharge from the eyes of an infant who has had the disease so slightly as scarcely to attract attention. It is not common among adults who live in clean and roomy houses, with comfortable surroundings; but is met with often enough in very young infants to be considered one of their special diseases. It is most frequent where a number of people are crowded together, as in barracks, asylums, charity schools, etc. Some of the most frightful epidemics formerly occurred on board slave ships.

This disease is sometimes called Egyptian ophthalmia, from its great frequency in Egypt, where it prevails to such an extent as to assume the proportions of a national scourge, and the number and wretchedness of its victims sadden the journey of sympathetic travellers. Its causes are exposure to intense heat and glare, the high winds driving clouds of sand before them, and the poverty

and, ignorance of a large portion of the inhabitants.

Many soldiers of the Crusades were victims of this disease, and numbers of blind beggars groped about the streets of London and Paris, appealing to the sympathies of the passers-by with the cry of "Holy Land!" "Holy Land!" to show that they had lost their sight in the popular cause. Three hundred of these persons were cared for in an asylum established in Paris by Louis IX., which, from the number of its inmates, was called "Les Quinze Vingt." It is still in existence, with the same name, and is the oldest institution for the blind in the world.

Purulent ophthalmia is one of the most dangerous diseases to which the eye is subject, and its victims are the most numerous in asylums for the blind. Fortunately, in a large proportion of cases, it yields to proper treatment, particularly the form occurring in infants, which is nearly always curable in its earliest stages; but no time should be lost, as, in a bad case, a few hours sometimes decide the patient's fate. The most scrupulous cleanliness is always essential, and the greatest care must be taken that no towel or basin that the patient uses shall be used by any one else. When the disease appears in a building where a number of persons are congregated, every one attacked should be immediately isolated.

The question is frequently asked, Whether it is better to bathe the eyes in cold or warm water? So far as external bathing is concerned, this is merely a question of comfort, that may be decided by the experience of the individual; but it is not well to apply anything to the conjunctiva unless it is inflamed. Many people have an idea that it strengthens the eyes to open them under water; but, as we are not amphibious animals, though the eye may be able to bear this exposure to an unnatural element, it certainly cannot suffer from the want of it. Healthy eyes, if given anything like a fair chance, will take care of themselves, and need no attention beyond what may be necessary to avoid abusing them.

Ophthalmia, Sympathetic. —

When the eye is extensively lacerated by a wound, or when a foreign body is lodged in the ball, the effect is not always confined to the injured eye, but there is great danger of the other being lost by sympathetic inflammation. In nearly all such cases the only safety from ultimate blindness is in the removal of the offending eye, which is no longer either useful or ornamental, but has become merely a dangerous deformity, and sooner or later, sometimes after many years, is pretty sure to give trouble. Fortunately, the operation for the removal of a disorganized eye is not a serious one, and the resulting disfigurement can, to a great extent, be concealed by the use of an artificial eye.

Such perfection has been reached in the manufacture of artificial eyes, that close examination is often needed to distinguish them from the natural organ. They are thin shells, the edges of which fit into the folds of the conjunctiva, and they are held in place by the lids. One should never be worn more than two or three years, as, when the enamel is eroded by the tears and mucus, it loses the perfect smoothness of its surface, and becomes a source of irritation.

Opium (*Lat.* opium; *Gr.* opion, from *opos*, juice of vegetable).—From a very early date people have been familiar with the use of the common white poppy to soothe pain and give sleep. In this country the poppy is chiefly employed as a medicine, but in the East it is much in request as an exhilarating narcotic. The Eastern mode of using opium has been described by Captain Wilkes as he saw it in Singapore. The method of employment is much the same in Singapore as in China, the headquarters of opium-smoking.

"The opium shops," says Captain Wilkes, "are among the most extraordinary sights in Singapore. It is inconceivable with what avidity the smokers seek this noxious drug at the shop windows. They then retire to the interior, where a number of sickly look-

ing persons, in the last stage of consumption, haggard and worn down with care, are seen smoking. The drug is sold in very small pieces, and for ten cents enough to fill a pipe once is obtained. With it are furnished a pipe, a lamp, and a couch to lie on, if such it may be called. The pipe is of a peculiar construction, and is in part of metal, having an interior cup just large enough to contain a piece the size of a pin's head. The opium is difficult to ignite, and it requires much management in the smoker to obtain the necessary number of whiffs to produce intoxication in one habituated to its use. The couch is sometimes a rude bench, but more often a mat on the floor, with a small raised bench; and, in frequented shops, is frequently occupied by a pair of smokers, who have a lamp between them."

The essential and primary action of the drug is upon the nervous system, and the ordinary results of this action, when a moderate dose is taken, is that the mind is exhilarated, the ideas flow more quickly, and a pleasurable or comfortable condition of the whole system is experienced which it is difficult to describe. Opium thus acts much in the same way as our wines and spirituous liquors, and it is chiefly as a substitute for these that it is employed in China. It possesses, however, an extraordinary power of sustaining the strength, which is not found in alcoholic drinks, and by its means men are enabled to undergo fatigue and continued exertion under which they would otherwise certainly sink.

When De Quincey, the famous "English Opium Eater," took opium in the form of laudanum for the first time to dispel pain, he thus describes the effect which the drug exerted upon him:—

"I took it, and in an hour, oh, heavens! what a revulsion! what an upheaving, from its lowest depths, of the inner spirit! what an apocalypse of the world within me! That my pains had vanished was now a trifle in my eyes. This *negative* effect was swallowed up in the immensity of those positive effects which had opened before me—in the abyss of divine enjoyment thus

suddenly revealed. Here was a panacea—a *φάρμακον νήπενθες* for all human woes. Here was the secret of happiness, about which philosophers had disputed for so many ages, at once discovered! Happiness might now be bought for a penny, and carried in the waistcoat pocket; portable ecstasies corked up in a pint-bottle; and peace of mind sent down in gallons by the mail-coach."

This description is in rather a high-flown style, but there can be no doubt that in small quantities, seldom employed, opium produces serenity of mind and pleasurable sensations. It inspires animal courage and animal desires; and from the latter quality arises its use as a habit in countries in which polygamy is permitted. A practice of the Turks was to swallow the bulk of a hazelnut of opium when going to battle, with the view of inspiring courage.

The sensations experienced when under the influence of opium have been well described by Dr. Madden, who indulged in the drug in one of the coffee-houses at Constantinople.

"I commenced," says Dr. Madden, "with one grain. In the course of an hour and a half it produced no perceptible effect. The coffee-house keeper was very anxious to give me an additional pill of two grains, but I was contented with half a one; and in another half-hour, feeling nothing of the expected reverie, I took half a grain more, making in all two grains in the course of two hours. After two hours and a half from the first dose, my spirits became sensibly excited; the pleasure of the sensation seemed to depend on a universal expansion of mind and matter. My faculties appeared enlarged; everything I looked at seemed increased in volume; I had no longer the same pleasure when I closed my eyes which I had when they were open; it appeared to me as if it was only external objects which were acted on by the imagination, and magnified into images of pleasure; in short, it was 'the faint exquisite music of a dream' in a waking moment. I made my way home as fast as possible, dreading at every step that I should commit some extrava-

gance. In walking, I was hardly sensible of my feet touching the ground; it seemed as if I slid along the street, impelled by some invisible agent, and that my blood was composed of some ethereal fluid, which rendered my body lighter than air. I got to bed the moment I reached home. The most extraordinary visions of delight filled my brain all night. In the morning I rose pale and dispirited; my head ached; my body was so debilitated that I was obliged to remain on the sofa all day, dearly paying for my first essay at opium-eating."

Those unfortunate persons in this country who, through irritability of temperament and proneness to despondency, betake themselves to the dreadful practice of opium-eating, suffer severely in the sequel for the transitory pleasure derived from it. The habit induces constitutional debility, loss of memory and appetite, early decrepitude and shortness of life. The person is characterized by a listless, dull manner and an unconquerable aversion to any exertion of mind or body. While not under the influence of the spell, his despondency amounts to an indescribable horror of mind. All his motions are embarrassed by a universal tremor of the limbs; he becomes paralytic, perhaps apoplectic, and he expires in a fit. The habitual use of opium induces nearly the same train of disease as an inveterate habit of drinking ardent spirits. An overdose of this potent drug may occasion *risus Sardonicus*, alienation of the mind, madness, convulsions, apoplexy, and death. Its effects are not confined to its internal exhibition: *Galen* mentions that an opium plaster held on a gladiator's head by a stratagem of his enemy, speedily deprived him of life; and physicians witness the effect of external opiates continually.

Opium, Effects of Excess in.—

These have been summed up as follows:—"Even in the climate where it grows, opium, when used to great excess and for a long time, destroys the constitution. It increases thirst, lessens appetite, constipates the bowels, enfeebles the pulse, and

exhausts the nervous system. In its last stages its direful effects are seen in the glassy eyes, the sallow features and the unequal gait. Those in the East who give themselves up wholly to its seductions are usually short-lived. They are said to die on the average before forty. *Opimania* is sometimes as truly a disease as *dipsomania*."

Optical Defects (*Gr.* *optikos*, relating to sight; from *optomai*, I see).—As the eye is a camera, just as subject to the ordinary laws of light as any other optical instrument, it may be free from disease and perfectly sound, and vision may still be indistinct because the rays of light are not accurately focussed upon the retina. The causes that give rise to such imperfections of sight are called optical defects. Each defect will be found described under its own name.—*See* **ASTIGMATISM**, **HYPERMETROPIA**, **MYOPIA**, **PRESBYOPIA**, etc.

Optic Nerve.—*See* **IRIS**.

Orange.—The orange, when perfectly ripe, may be allowed to the most fastidious dyspeptic, but the white or inner skin should be scrupulously rejected, for it is not more digestible than leather. This fruit can be enjoyed in perfection only when taken perfectly ripe from the tree. The imported fruit is always gathered in an unripe state. Oranges of good quality should not lose more than one-fifth of their weight by the removal of the peel. Peeled fruit contains about 86 per cent. of water, 8 to 10 per cent. of sugar, and small quantities of citric acid, citrate of potash, etc.

The popular idea of the orange in England is that it is only serviceable as a raw fruit, which is meant to be torn open with the fingers or teeth, and sucked and eaten till the golden rind is divested of its luscious pulp and juice, and is thrown away. None of the cookery books in common use are at the pains of letting their readers know that the orange admits of being used in many dishes, which are fit to be set before an

accomplished gourmet, and yet are within the compass of people possessing the scantiest incomes. An eminent physician at Biarritz has published a book in which he asserts that nothing is so improving to the blood as the juice of the orange, and that its use either in the form of orange salad, orange tart, or orange fritters—all of them to be had for a few pence—is especially to be recommended for children or for persons with delicate digestions.

The orange is of two kinds—the China and the Seville. The China orange, from its sweetness, possesses a nourishing quality, while from its acidity it is liable to all the inconveniences that attend the use of stone fruits. It is, however, exceedingly pleasant and cooling. It is powerfully anti-scorbutic, and is highly useful in fevers, particularly those which discover a bilious or putrescent tendency.

The juice of the Seville orange is, on the contrary, rough, sour, and somewhat bitter. It is not nearly so palatable, but more stomachic than the China orange. It is also more an antiseptic, and therefore preferable to the other in the cases of diseases mentioned above. To give the orange its proper degree of flavour, it requires to be fully ripened by a very warm sun.

Orange Wine.—Orange wine possesses something of a stomachic quality. Its use has been recommended of a morning to remove viscid slime from the stomach and correct the state of the digestive organs, so as to create an appetite in giving tone to the stomach. Like other home-made wines, it is somewhat diuretic, is best used in summer, and is more adapted to young constitutions than others.

Ordinary Temperature of Adult.—See ANIMAL HEAT.

Organic Matter in Air.—Analysis of the air of various localities reveals striking results in even the comparative quantities of organic matter present. Thus, in the atmosphere of a close house the amount

of organic matter in 1,000 parts is stated as 60·7; in an uncovered pigstye at 109·7; in warm weather in London streets, 29·2. Contrast with these figures the organic matter found in purer situations, as, for example: Hospice of St. Bernard, 2·8; Lake of Lucerne, 1·4; open air sixty miles from Yarmouth, 3·3.

Organic Matter in Water, Test for.—See CHEMICAL TESTS FOR WATER.

Organ of Smell, Nicety of (*Lat. organum; Gr. organon*, an instrument; from *ergo*, I do, or work).—"The nicety of the bodily organs, by which we perceive these extremely diluted perfumes," says Professor Johnston, "is equally a subject of admiration. The sense of smell detects and determines the presence of these infinitesimally minute molecules. This is remarkable. But it does much more. It distinguishes between them, pronouncing the impression it derives from one class to be agreeable, and from another class the reverse. It then pronounces upon the amount and kind of the pleasurable sensation produced by each, and so through a long series of varieties and degrees. How delicate the structure of the organs of smell must be! How surprising that they should continue uninjured and unimpaired amid so much thoughtless usage and for so long a series of years!"—See SENSE OF SMELL.

Organs, Functions of, Modified by Brain.—See FUNCTIONS OF ORGANS MODIFIED BY BRAIN.

Organs, Interchanging Action of.—See PHYSIOLOGY OF SKIN.

Organs of Sense.—See SENSES, THE FIVE.

Ortolan.—This is a small bird of a delicate flavour much prized by epicures; but, like all game, it is liable to the objections generally made to game and birds of this description.

Outdoor Exercise.—*See* EXERCISE
IN THE OPEN AIR.

Over-Application, Effect of, on Brain.—*See* BRAIN, EFFECT OF OVER-APPLICATION ON.

Overcrowding, Danger of.—Whenever the respiration of an animal is stopped, or whenever it is confined to an air which has already been respired, carbon accumulates in the venous blood and mixes with the arterial blood. In half a minute the blood flowing in the arteries is evidently darker, in three-quarters of a minute it is of a dusky hue, and in a minute and a half it is quite black. Every particle of arterial or red blood now disappears, and the whole mass becomes venous, sensibility is abolished, the animal falls down, and in three, or at most four minutes, the heart entirely ceases its action, and can never be again excited.

Overcrowding, Terrible Effects of.—Perhaps one of the most instructive lessons against the overcrowding of human beings in a confined space is that furnished by the horrible sufferings of a hundred and forty-six prisoners shut up, on a sultry night in June, in the well-known Black Hole of Calcutta.

These sufferers formed the surviving part of the garrison of Fort William, which had been captured by the infamous Nabob of Bengal, Surajah Dowlah. It was the very height of summer, and the night more than usually sultry for that season. The captured men were thrust into a room twenty feet square, with only two small windows, both of which were obstructed by a verandah, and the door being locked upon them, they were left to their despair. The excessive pressure of their bodies, one against another, and the intolerable heat which prevailed, soon convinced the prisoners that it was impossible to live through the night, and violent efforts were made to burst the door, but without effect, for it opened inwardly. Many now began to give way to desperation,

though Mr. Howell, the officer in command, who had planted himself near one of the windows, contrived for a brief space to restrain them, by representing that their only hope lay in continuing as much as possible in a state of tranquillity, both of body and mind. He then addressed himself to the officer who commanded the guard, an old jemadar, who bore some marks of humanity in his countenance, and promised him a thousand rupees in the morning, provided he would separate his prisoners into two chambers. The old man went to try, but returning in a few minutes, said it was impossible. Mr. Howell offered him a larger sum, on which he retired once more, and returned with the fatal sentence that no relief could be expected, because the Nabob was asleep, and no one dared to wake him.

In the meantime every minute had increased the sufferings of the captives. The first effect of their confinement was a profuse and continued perspiration, producing before long an intolerable thirst, which in its turn was succeeded by excruciating pains in the chest, and a feeling of absolute suffocation. Every effort was now made to obtain an increase of air and space. The wretched men tore off their clothes, and waved their hats backwards and forwards, but these movements afforded no relief, and it was proposed that they should all sit down on their hams at the same time, and, after remaining a little while in this posture, should all rise again together. It was a fatal expedient, for at every movement some proved unable to recover themselves, and, being trodden underfoot by their companions, perished miserably. Fresh attempts were now made, and with redoubled fury, to force the door; these likewise failed, and there arose a wild and unearthly cry, over which one word, that of "Water, water," could alone be heard. The jemadar, who really pitied his captives, strove to gratify them, and caused skins filled with water to be placed against the windows, but the apertures were too small to admit them, and the sole consequence was an increase of suffering by a further exclu-

sion of air. Their senses now forsook many of the captives. They raved, fought, and struggled to reach the skins, tearing each other down, and trampling the fallen to death, while the soldiery without held their torches on high that they might witness the terrible spectacle. But it is unnecessary to continue the narrative further. Let it suffice to state that when the Soubahdar next morning commanded the dungeons to be cleared, the door was found choked up with the dead; for out of the whole number imprisoned not more than twenty-three individuals survived the horrors of the night.

Over-Use of Certain Organs, Injuries from.—It is as true of the mind as it is of the body, that no part can be exclusively used without injury to the individual considered as a whole. In the broadest possible division of our being, neither "mind" nor "body" has a right to exclusive cultivation, and such exercise is never in the interests of the best physical health. The same is true if we subdivide the faculties of the body and mind. There are many ways in which the mind is exercised in daily life; book-study, concentration of attention on discourse, memorizing, reproducing, extemporary discourse; attention to great single questions in business and to multitudes of petty ones; ciphering and copying by the day. None of these can properly be kept up to the exclusion of the others, unless there is a strong predisposition and fitness on the part of the individual; they should alternate one with another, for most persons are incapable of sustaining continued strain in one of these points. We say that "worry" kills a man, but in saying so we mean simply that the mental excitement upon one subject, which is perfectly healthful if continued for a few hours, becomes tyrannical and destructive if kept up for whole days. A man may be worried into illness by incessant quiet ciphering as well as by attendance at the Stock Exchange.

from *Gr. oxus, acid*).—This acid, more particularly in the form of acid-oxalate of potash, is found in the common sorrel, the wood sorrel, garden rhubarb, and many other plants. It is the least wholesome of the vegetable acids, and acts indeed, even in moderate doses, as an irritant poison.

Oxalic Acid.—There is an acid obtained by the chemical action of nitric acid on sugar, which was on that account called acid of sugar; it is now known by the name of *oxalic acid*. As sold in the shops it is a white crystallized salt, very much like Epsom salts in appearance, but is intensely acid and acrid to the taste. In the dose of half an ounce it has frequently proved fatal in half an hour; and there is no doubt but that a much less dose would destroy life. Another salt in crystals, but of a brownish appearance, sold under the treacherous name of salt of lemons, is a compound of oxalic acid and oxalate of lime, and is also a poison.

Oxalic acid has been frequently taken into the stomach by mistake; it has also been occasionally had recourse to for the purpose of suicide or murder. The mistake has always arisen from its very strong resemblance in appearance to Epsom salts. The taste will in a moment discover the mistake, or satisfy a doubt, when it arises, or prevent the occurrence of mistakes if constantly had recourse to by way of precaution before drinking off a dose of salts. The taste of oxalic acid is, as its name denotes, and as we have stated above, sour, and it is also acrid, whereas the taste of Epsom salts is a decided bitter.

The symptoms, after taking oxalic acid, are a burning sensation in the throat and stomach, often bloody vomiting, an extreme general debility almost amounting to paralysis, and a remarkably feeble and often imperceptible pulse; and when the dose is large, death occurs in a few minutes, or in almost every such case within the hour. In some instances there has been numbness down the back, and in the lower extremities, and in others very acute pain in the same parts.

Oxalic Acid (*Lat. oxalis*, sorrel;

Oxalic Acid, Antidote to.—

Should the mistake be immediately detected, the antidote is *magnesia* or *chalk*, which form with the oxalic acid insoluble and harmless salts; but not so, be it well remembered, either with potash or soda, for the salts produced by a combination of these with oxalic acid, are readily soluble and decidedly poisonous. Mix the *magnesia* or *chalk* with just sufficient water to make it drinkable, and give a wineglassful every two or three minutes, till the patient has swallowed two or three ounces of the *magnesia* or *chalk*. Vomiting need not be excited, nor the stomach pump used, at least not till after the administration of the above antidote.

Oxalic Acid, Test for Presence of.—

The best test of the presence of oxalic acid is lunar caustic. Boil the contents of the stomach, or the matter ejected from the stomach by vomiting, previously to the administration of the antidote, in water for half an hour; add some potash, and then filter through paper. To this solution add a few drops of a solution of lunar caustic; and, if oxalic acid has been present, you will have a dense white precipitate, which, when collected on a filter, dried, and heated, becomes brown on the edge, fulminates faintly, and is dispersed.

Oxide of Zinc Ointment.—See OINTMENTS.

Oysters (*A.-S.* *ostre*; *Lat.* *ostrea*; *Gr.* *ostreon*).—Oysters are eaten both raw and dressed; when raw, they are in every respect preferable; for by cooking they are hardened, and deprived of the salt water which promotes their digestion in the stomach. Eaten raw, they are nourishing and easily digested, and may be taken with great advantage by the robust as well as by the weak and consumptive. They are also generally attended with a laxative effect, if eaten in any quantity, and are, therefore, well suited as an article of diet for those liable to costiveness. Stewed oysters are

particularly indigestible and unwholesome, and should never be eaten by the sick or the delicate. They are extremely pernicious to lying-in women; indeed, so much so as to have occasioned death in more than one or two instances when given to women in such a situation.

Oysters are often cold and uncomfortable to dyspeptic stomachs unless warmed with a certain quantity of pepper and good white wine.

Oysters being a mild and cooling article of food, are of the utmost benefit to those who are troubled with warm flushings of the face, and other feverish symptoms, usually felt in declines, and in nervous and irritable constitutions. It is quite possible, by making them a principal part of a meal, to prevent in a great measure the irritation and heat which produces the hacking and distressful cough in the more advanced stage of consumption. The great object to be kept in view, in the prevention of consumption, is to maintain and increase the tone of the general system; and oysters, and other such mild nourishing food, will lend us powerful assistance in preventing consumption in those who are disposed to it either from family or personal causes. Only a very small quantity of vinegar should be used by those who eat oysters to prevent consumption: those who take them to cure that disease may advantageously take it more freely, since this, and most other acids, have a favourable effect in subduing hectic fever, and in assisting the efforts of nature to overcome the disease. If the oysters are at any time felt lying cold and heavy on the stomach, half a pint of hot milk is a valuable remedy.

Oysters are often improved in flavour and wholesomeness by being kept for a day in a shallow dish with some weak brine, a small quantity of oatmeal being strewn over them. Oysters contain about 14 per cent. of flesh-formers, and 80 per cent. of water.

Ozone (*Gr.* *ozo*, I smell).—Ozone is one of the chemical constituents of the atmosphere. This gas is what is known in chemis-

try as an allotropic form of oxygen—that is to say, it is oxygen exhibiting various attributes which distinguish it from ordinary oxygen. Ozone possesses both taste and smell, differing in this from oxygen, which possesses neither. Its chemical affinities are more powerful than those of ordinary oxygen. It is denser or heavier by one half than oxygen in its normal state, three volumes of this gas combining to form two of ozone. This gas can be produced artificially by various means, one of which is the passage of a series of electrical discharges through pure oxygen. The invigorating air of open downs and mountain regions owes much of its health-giving properties to the presence of ozone. The sea breeze is generally especially rich in ozone. Its influence on man and the reasons of its marked effect on the recovery of invalids who are brought under its sanative influence are not yet understood.

Ozone, a Disinfectant.—Within the last few years, the attention of scientific men has been attracted to the powerful disinfecting action of the chemical agent “ozone.” This substance is supposed to be oxygen electrified. It is invisible and subtle, and betrays its presence, when concentrated, by a pungent and peculiarly disagreeable odour. It is produced naturally in the air during a thunderstorm, whenever an emission of the opposite electricities occur. It also may be made artificially, by passing a succession of electric sparks through a tube or vessel containing atmospheric air or oxygen gas. It may also be produced by the slow action of phosphorus on oxygen or atmospheric air. Ozone is said to be the means by which the natural equilibrium of oxygen in the air is maintained against the disturbance which would otherwise be induced by respiration, combustion and oxidation, generally going on upon the surface of the earth, as it is the most powerful of all oxidizing agents. One very interesting fact with regard to it as a disinfectant, is the circumstance that it is usually absent from the air of inhabited dwellings, hospitals,

and badly ventilated apartments. Moreover, in malarious districts, it is said that the air is either wholly deficient in ozone, or else contains it in the least appreciable quantity. It must, however, be stated, in qualification of its beneficial sanitary influences, that when it exists in the air in undue proportion it begins to assume baneful properties, and produces inflammatory action upon the mucous membrane of the throat and larynx. It is thus supposed to be often the cause of influenzas and bronchial affections.

Ozone, Test for.—A ready way of testing the presence of ozone in the air is by means of iodine starch-paper, which may be simply prepared by mixing a little starch with a solution of iodide of potassium—a salt obtained of any druggist—and imbuing unsized paper with the compound. When slips of this paper are exposed to air containing ozone, they will gradually turn blue. The paper should be exposed in the shade, and out of the way of volatile exhalations and the sun's rays. When the test indicates a deficiency of ozone, as it may do in the apartments of the sick, the sign naturally suggests the propriety of using a remedy. This is not difficult to be applied; for it is only necessary to pour some water in a broad and shallow plate, immerse sticks of phosphorus at half their length in it, and leave the whole exposed in the apartment to be disinfected. The chemical combinations which ensue will produce ozone, and the test-paper will show when a sufficient quantity has been generated.

The action of the ozone may be explained as follows: One of the constituents of the compound known as potassium iodide is the metal potassium, between which and oxygen a strong chemical affinity exists. Ordinary oxygen is not sufficiently powerful, however, to decompose the salt in order to unite with the potassium. This the stronger chemical affinities of ozone enable it to accomplish. The result is that the iodine with which it is bound up is set free; and as starch, when moistened, is always turned blue by the presence of free iodine, the development of

this colour in the paper shows that ozone is present.

Pails, Cleansing of.—See CISTERNs, CLEANSING OF.

Pain in the Side.—See STITCH.

Pain in the Side in Pregnancy.

—Among the many neuralgic affections from which the pregnant female is apt to suffer, frequent pain in the side is not the least annoying. It does not come on till the later months of pregnancy, and is due to the pressure of the gravid uterus upon the liver. The pain generally comes on in the after part of the day, and may be so severe as to make the patient think she is suffering from some inflammatory attack. The state of the pulse and temperature, however, point to the true nature of the affection. In this case both pulse and temperature will be found normal; whereas, if the pain were inflammatory in its nature, the pulse would be quickened and the temperature raised. It is frequently very difficult to alleviate this distressing symptom. The patient should apply hot fomentations to the part. A belladonna plaster will frequently give relief. Friction with liniments containing opiates is also very valuable.

Pain in the Stomach, Causes of (*Lat. stomachus; Gr. stomachos, from stoma, mouth*).—Gastrodynia, which strictly means pain in the stomach, is meant in this country to include all degrees of pain, from the sensations that one possesses in stomach-ache to pain of an almost unendurable character. The pain is not always felt in the same spot, nor is it of the same character. Weight, oppression, and distention are the sensations most frequently complained of; and these are the symptoms which ordinarily indicate slight disease of the stomach. More severe forms are commonly accompanied by a sensation of burning—not heartburn—and others, still, by a horrible feeling of gnawing or tearing. Pain in the stomach may come

from various causes, such as the presence of irritant matters, disease of its walls, alterations in its own secretions, etc. Foreign substances of an irritant character may be either indigestible articles of food, regurgitated bile, or corrosive substances swallowed, such as strong acids or alkalies; these, however, being rare compared with the former. The diseases affecting the substance of the stomach and giving rise to pain are mainly two: simple ulcer and cancer. Altered secretions are a very important cause of pain. Frequent pain in the great gut may be mistaken for pain in the stomach; but, as a rule, this is generally due to flatulence, and extends to other parts of the abdomen which pain in the stomach alone cannot do.

Pain in the Stomach, Treatment of.—As to treatment of pain in the

stomach, that must be entirely guided by the nature of its causation. Heat and cold will, however, frequently give relief, and may be applied either externally or internally, or both. Neither of these is likely to do harm.

Dr. Mayo, speaking on this subject, says:—"There are attacks of pain in the stomach, which are commonly described as spasms. They come on suddenly, are of the most acute description, and seldom last long; they are described as suggesting the idea of a knife stuck through the side. Women are more subject to these seizures than men. I suppose that they entirely result from distention with wind; they are allayed at once by taking either a wineglassful of very hot water alone, or hot water with twenty drops of sal volatile, or with a dessert-spoonful of brandy in it; at the same time, and in which the relief seems to consist, wind breaks off the stomach. Sometimes a few drops of laudanum in hot water form the best remedy for these seizures: but it is better to try other remedies first.

"Generally speaking, pain in the stomach rarely denotes serious disease: it is the result, commonly, of slight and functional disturbance, and is a matter rather of

present suffering, than of apprehension as to the result. Nevertheless, this remark does not hold true always. Obstinate cases of pain at the stomach, with flatulency, recurring irregularly, lasting several days or weeks, and gradually going away, then renewed, again going away and returning, are sometimes dependent upon ulceration of the lining membrane of the stomach. This complaint is of a serious nature; for although it is often recovered from, yet a certain proportion of those attacked with it, after weeks, or months, or years of capricious indigestion, die suddenly, through perforation of the stomach, and the escape of its contents into the cavity of the belly."

Pains, False.—See FALSE PAINS.

Painting in Distemper.—See DISTEMPER, PAINTING IN.

Palate (*Lat.* *palatum*).—The palate or roof of the mouth consists of two portions: the hard palate, in front, and the soft palate (called the *velum*) behind it, terminating in a central pendulous structure—the uvula, commonly, but erroneously, called the palate. The hard palate, which is a bony plate, is covered by a dense tissue called the periosteum, from two Greek words, *peri*, around; and *osteon*, a bone. The soft palate is a soft movable fold or curtain of mucous membrane, including muscular fibres. It serves important purposes in the mechanism of the mouth, assisting materially in the articulation of sound, in the act of swallowing, and, conjointly with certain muscles connected with it, and with the tongue and pharynx, preventing the passage of food into the nose, which opens into the upper part of the throat above the soft palate.

Palpitation in Pregnancy (*Lat.* *palpito*, I move quickly).—Frequently during pregnancy a female becomes greatly alarmed by finding herself the subject of occasional attacks of palpitation or beating at the heart. There will be little cause for

anxiety if this condition has not been suffered from before, and only attacks the patient for the first time now. It may be due to one or other of the following causes: 1. To the heart sharing sympathetically in the general disturbance of the system. 2. To the pressure of the enlarged womb interfering with the proper action of the heart.

During the attack, should it be sufficiently severe to require treatment, the best thing to give will be a teaspoonful of sal volatile in a little water, which may be repeated in four hours if necessary. Sometimes a patient is awakened during the night with a feeling of impending suffocation. She feels as if sufficient air were not entering the room, and requests that the windows be thrown open that more may be admitted. Everything must be done in such cases to soothe the patient.

It is quite a mistake to fly to stimulants and administer them in the reckless manner that is frequently done when a female is thus seized. They are quite unnecessary, and will generally do more harm than good. What is wanted is to keep her quiet and as free from excitement as possible, when the attack will gradually pass off, and leave the patient quite well again.

Palpitation of the Heart.—Palpitation is the name given to the beating of the heart when that ceases to be insensible and becomes obvious to the feeling of the individual. The two things which seem to have most influence in producing this alteration, are increased violence of the heart's action, and, perhaps, even mere irregularity of action. Under ordinary circumstances the motion of the heart is so even and regular, that one can only detect its beating by placing the hand over the spot where its apex strikes against the ribs, but in certain cases of heart disease the beating may be so violent as to shake the bed in which the patient lies. Palpitation, though very often a sign of heart disease, is by no means invariably so; perhaps, out of all the cases of palpitation one sees, the majority are in

individuals not the subjects of heart disease; for anything which interferes with the regularity of the heart's action produces the painful or unpleasant feeling of palpitation, and that may be readily done in many ways without the substance of the heart being affected.

Palsy, Symptoms of (a contraction of "paralysis," *Gr.* *paralusis*; from *para*, beside; *luo*, I loosen).—The disease, whose scientific name is *paralysis agitans*, but which, in common language, is called palsy, or shaking palsy, consists in a want of power in co-ordinating the muscles, and also, it may be said, of keeping them at rest. The shaking commonly begins by affecting the hands and arms, but later it may affect any part of the trunk or limbs. Very often the head is early affected; later, even the jaws may be affected. This agitation is increased by any mental effort, especially to call into play the muscles affected. The disease is progressive, and by-and-by the whole body becomes affected, so that the patient can hardly walk, being always obliged to run. All the time the senses are unimpaired, and the patient is acutely sensible of his misfortune, which often sadly interferes with his occupation. His bodily power subsequently becomes impaired, for he is often unable to sleep at night, and even unable to take his food in comfort from the unceasing agitation.

Palsy, Treatment of.—These cases commonly occur in men advanced in life, and in them little benefit is to be hoped for; but it may occur earlier, and then we may hope to alleviate, if not to cure, the conditions by the use of strychnine, iron, and galvanism, especially of the continuous current. Even in the most favourable cases the prognosis is bad, but, with care, a long life may be possible, and, as the intellect is quite clear, much good work may be done in it.

Palsy, Scrivener's.—See SCRIVENER'S PALSY.

Panada (*Spanish*, *panada*; from *Lat.* *panis*, bread).—This consists of bread boiled in water, and afterwards sweetened with sugar; dry biscuit soaked is the best for this purpose. It should be well boiled, and the addition of sugar should be moderate. It is the common food of infants, but is very liable to acidity. The term is applied to other preparations, in which the material used is crushed, chopped very fine, or bruised. Thus "chicken panada" consists of the white meat of a young fowl or chicken very finely chopped or pounded in a pestle and mortar.

Pancreas (*Gr.* *pan*, all; *kreas*, flesh).—The pancreas, which is known in the animal as the sweetbread, is a little gland six or eight inches long, weighs a few ounces, and lies across the spine against the back wall in the upper part of the abdominal cavity, directly behind the stomach. It is of a pale red colour, and in shape bears some resemblance to the tongue of a dog. It has an excretory duct, which opens into the duodenum in connection with the hepatic duct from the liver. The fluid, known as the pancreatic juice, which this gland furnishes, looks very much like the saliva, and, indeed, possesses very much the same properties. It is discharged into the duodenum, or first portion of the intestine, where the bile is poured in. The office of this fluid is similar to that of the saliva. It completes that change from starch to sugar which the saliva may have left incomplete, and which the fluids of the stomach have no power to accomplish.

In the accompanying illustration is given a view of the pancreas and the surrounding organs. The liver and stomach are turned upwards to show the duodenum, the pancreas, and the spleen: *a*, the aorta; *b*, the third or transverse portion of the duodenum; *c*, the cardiac end of the stomach; *d*, the crura, or pillars of the diaphragm; *e*, *e'*, the descending portion of the duodenum; *p*, the pyloric end of the stomach; *l*, the left lobe of the liver; *l'*, the right lobe of the liver; *g*, the gall bladder; *x*, the hepatic

duct; *s*, the under surface of the stomach; *o*, the pancreas; *k*, the spleen; *i*, the commencement of the jejunum, or second portion of the small intestine; *m*, the superior mesenteric artery; *t*, the coeliac axis.

Pandemic.—See INFLUENZA.

Panicled Millet.—See MILLET, PANICLED.

Panniculus Adiposus.—See CORIUM.

Paper Coverlets.—There may be some who look upon woollen clothing with

Paper Stainers, Disorders Incidental to.—The chief poisonous substances used in the arts, and inhaled in the form of dust, are arsenic, mercury, and lead.

In the present state of popular knowledge little need be said of the effects of arsenic in wall papers. It is quite generally known that almost all shades of colour are producible by arsenical preparations, and that such are actually among the most popular for producing the favourite neutral tints of the day—green paper being scarcely more dangerous than any other. It is not the workmen, however, but the customers who



THE PANCREAS AND SURROUNDING ORGANS.

favour, but who regret its extra pecuniary cost. To these it may be pointed out that in common paper—white, brown, or even newspaper—we have an almost equally warmth-sustaining material to wool. For the poor it is invaluable, and can be employed as a lining to a coat or waistcoat, as a blanket or quilt, or even as a petticoat. Ordinary brown paper, coated with tallow or pitch, was our grandmothers' "All-cock's Plaster," and right good service it did. Wadding or wool quilted between two sheets of paper forms the best and lightest chest protector, and, we need hardly add, the cheapest.

seem to suffer from contact with the arsenical colours; at most the workmen have certain cutaneous eruptions and ulcerations

Papillæ of Skin.—See CORIUM.

Paralysis (*Gr.* *paralysís*; from *para*, beside; *luo*, I loosen).—This term is generally used to signify a loss of motion in some part of the body; but as the nerves supplying most parts of the body are of a mixed character—that is, motor and sensory—the idea usually conveyed implies also a loss of sensation. Paralysis may, however, be motor or sensory, or both. Moreover, it

may be *complete* when there is a total loss of power and sensation; or *partial*, when these are partly, not wholly, lost. Sometimes the word *partial* is used to imply that only certain parts of the body are affected; but for this purpose the term *local* seems preferable. General paralysis implies that the whole body is affected, but the term "general paralysis of the insane" expresses one particular form of malady which is an accompaniment of insanity. The two most common forms of paralysis, and the only ones which it is worth while to speak of specially in a book of domestic medicine, are *hemiplegia* and *paraplegia*. Hemiplegia is that form of paralysis which affects one lateral half of the body without the other side being affected: hence hemiplegia is right or left. Paraplegia, on the other hand, means paralysis of the lower half of the body; but there is no right or left paraplegia—it must affect both sides, if not quite equally, at all events to some extent.

Generally, a first and partial attack is successfully treated. Friction, healthful living, digestible food, and electricity, are the common ways of its domestic management. The doctor is responsible for the treatment of the cause of the disease. When it is long-continued, great care must be taken that bed-sores do not form.

Parasites in Meat (*Gr. parasítos*; from *para*, beside; *síto*, I feed on; from *sítos*, corn).—The most familiar form of parasite in food is the *trichina spiralis*, which is found in pork. It causes terrible symptoms, the nature of which was not discovered until 1860. This worm is sometimes found in other animals besides the hog—as dogs, sheep, rats, mice, foxes, and frogs—and carnivorous birds. None of these animals seem to be worried by the presence of these parasites; only man is a sufferer.

Other parasites are the *cysticerci*, or *measles*, found in beef and veal, and pork, which form tape worms; and the *hydatid*, which is found in sheep and in man, and which comes from a little tapeworm. This parasite infests the dogs of Iceland, and the

hydatid of the liver which it produces is the cause of many deaths in that country. The *flukes* in sheep come from the snails that they eat, and to which they are attached.

The only way to save ourselves from the visitation of these parasites is *to kill them by cooking our meat thoroughly at a high temperature.*

Parasitic Diseases.—The large and important class of diseases which are due to the invasion of our bodies by visible and easily recognised parasites, such as the trichina worm, found in pork, only requires a small ounce of prevention to be escaped completely. It is hoped, therefore, that the readers of this work will be secured against an immense amount of suffering and ill-health by the knowledge, here placed at their disposal, of a few rules in regard to our means of protection against these minute but dangerous foes of humanity. — *See SCABIES, TAPEWORM, TRICHINA SPINALIS.*

Probably our most common, yet least dangerous, parasites are the intestinal worms, which not unfrequently infest children, and are also sometimes met with in adults. Occasionally these internal inhabitants give rise to severe nervous symptoms, but as a rule they are much less injurious than timid persons imagine. Hence, the indiscriminate use of irritating vermifuges is to be strongly deprecated as the far greater evil.

The vegetable parasites which have been proved to affect human beings belong to the class of fungi or moulds, and give rise to favus or scald head, ringworm, barber's itch, etc. The seeds or spores of these diseases may be conveyed from the diseased to the healthy by putting on hats or bonnets, gloves, or other clothing, sitting in the same seat, using the same towels, brushes, combs, or razors, or even touching the same articles of furniture.

The precautions ordinarily taken to avoid barber's itch, by having an individual cup and razor, are not sufficient, because the seeds or spores are so minute that fifty or a hundred might easily be conveyed to a new patient by means of the strop used for

sharpening different razors, the towel placed round the neck, or even by the hands of the barber himself.

Children are probably often affected with ringworm of the face and hands from playing with kittens or puppies in which the fungus causing this disease is quite common, and generally shows itself by destroying the hair in such a manner that bald spots upon the head, paws, etc., of the animals are produced. Horses and ponies have sometimes been the sources of contagion in a similar way, and in fact we cannot be too careful to avoid contact with diseased animals of any kind.

Parsley.—This is a useful aromatic and esculent vegetable. Its seeds have been highly prized for their diuretic qualities, and have been employed in jaundice and other obstructions of the viscera, as well as in gravel and various complaints. The aromatic nature of the culinary species makes it a common addition to broths and soups. When boiled it is of a mild aperient nature, and it is therefore most salutary when eaten in this state.

Parsnips.—The parsnip contains less water than the carrot. Amongst its ingredients there is a good deal of starch, with some sugar. The parsnip is often eaten with salt beef, and salt fish at particular seasons, as during Lent, but its peculiar taste and texture are disliked by many persons. When well boiled, parsnips are nourishing and wholesome.

This vegetable is found wild in meadows all over Europe, and, in England, is met with very frequently on dry banks in a chalky soil. In its wild state the root is white, mucilaginous, aromatic, and sweet, with some degree of acrimony; when old it has been known to cause vertigo. Willis relates that a whole family fell into delirium from having eaten of its roots, and cattle never touch it in its wild state. In domestic economy the parsnip is much used, and is found to be a highly nutritious vegetable. In times of scarcity, an excellent bread has

been made from the roots, and they also furnish an excellent wine, resembling the malmsey of Madeira and the Canaries. A spirit is also obtained from them in as great quantities as from carrots. The composition of the parsnip root has been found to be 79.4 of water, 6.9 of starch and fibre, 6.1 of gum, 5.5 of sugar, and 2.1 of albumen.

Pars. Papillaris, or Papillary Layer of Skin.—See CORIUM.

Partridges.—Partridges are much valued for their delicate flavour: they are best when young. Of this species there are a great variety, and they differ little in their qualities as aliment. They are something between the pheasant and the domestic fowl, being more tender than the former and rather inferior to the latter. They are reckoned highly proper as food for invalids and convalescents; but before being used they should be kept some little time, to render the meat perfectly tender. This, however, is often carried too far, for when the meat reaches a putrescent state it cannot be wholesome.

Passions, The (*Lat. passio*, suffering; from *pas'sus*, suffered; from *pa'tior*, I suffer).—The passions have been styled, not inaptly, by a number of authors, the gales of life; and from them, in the language of Scripture, may be said to proceed the issues of good and evil. They are the source of every agreeable and every painful feeling.

The passions have been properly divided into two kinds: the exciting or enlivening passions, and the depressing ones. They operate on the body either suddenly or in a slow, progressive, and gradual manner. Death has been known to be the immediate effect of the former; the latter generally produce a gradual decay and consumption.

The choleric and sanguine constitutions suffer chiefly from the violent passions; the phlegmatic and melancholy ones, whose sensations are dull, fall victims to those of an opposite kind. The long continuance of one

passion, by harassing the mind, is ever apt to produce bodily disease, and one termination peculiar to the effect of the passions is also apt to arise, viz., incurable mental imbecility.

The cure of mental diseases has at all times formed the most difficult task for the physician, so much so as to render it proverbial. Thus, in the language of Shakspeare, "Who can minister to a mind diseased?" Change of objects, of impressions, and ideas afford the only means, for the guidance of reason and argument has generally little sway. The early management of the mind, by a proper education, is the best guard against the mischievous effects of the passions at an after period. Their control becomes then a habit with the individual, and prevents any excesses which might otherwise spring from their occasional excitement by unforeseen circumstances. Hence it may be laid down as a leading maxim, that the control of our passions is an indispensable requisite to the proper enjoyment of health.

Passions and Emotions, Influence of the.—The influence of the passions and emotions on the health and well-being of the body is considerable. "Every part of the body," as is pointed out by Dr. Moore, in his "Power of the Soul over the Body," "testifies to the potency of emotions over the organism of life, though the anatomist searches in vain for the cause of functional derangement; it must be sought among agents which he cannot handle. An idea has frequently force enough to pre-terrate the strongest man in a moment. A word has blasted all his dearest, fondest, most habitual hopes. His only child has died—the partner of his life is snatched away; he has but heard of the calamity, or he has seen but a few dark words; nothing has touched his body, but the 'iron has entered his soul.' He reels; he trembles; some demon grasps his brain; sleep is gone; he dares not look at the light. A dull pain and a heavy cloud fix themselves over his eyes, and if the efforts of nature and art are unavailing, or if the

balmy spirit of religion breathe not healing through his soul, and speedily bind up the broken heart, some fatal malady of the brain more or less rapidly ensues, and the man of energy and affection becomes an outcast from society till death releases his spirit.

"There is no doubt that a feeling of awe, to speak of that emotion as an example, will modify the circulation, and probably the mystery-men of the American Indians, with its help, perform cures almost as wonderful as those ascribed to Parr's life-pills, or any other imposing pretension. Hence, also, the potency of charms. This feeling of awe seems to partake somewhat of the nature of horror, which is demonstrated to act powerfully on the blood-vessels, as is seen not only in the pallid appearance of individuals suffering from it, but also in the common success of a vulgar remedy for hæmorrhage—namely, a living toad hung about the neck. The disgusting contact almost instantly arrests slight bleedings. But perhaps this remedy is not more efficacious than the cold key, and it certainly is not more in demand, and therefore, it may be presumed, not more successful among our peasantry than the village blood-stancher, who is generally some shrewd old woman who sees a little through her neighbours, and is near akin to a witch. She is 'Great Mystery,' as the Indians say, and arrests bleedings by an awful manner, a muttered unmeaning prayer, and a call for faith.

"The dizziness felt in ascending an elevation is a curious evidence of the combined influence of mental state with bodily sensation. It is generally supposed to depend entirely on impressions received by the eye; but Wilkinson, in his 'Tour to the British Mountains,' proves the contrary. A blind man ascended with him to the summit of one of the Cumberland mountains. To this person he described the fearful precipices on every hand, but he soon repented of thus exercising his picturesque discourse, for the blind man speedily fell to the ground, overcome with dizziness, and screaming out with apprehension of tumbling down the rocks

into the abyss below. The blind man was a highly philosophic and scientific person. The mind was here affected more powerfully than it would have been by the actual sight of what was described, because imagination exaggerated the picture and enhanced the idea of danger.

"Any one who observes the tears flowing from the eyes, the blood rushing to the face, and the limbs trembling, in grief, shame, and fear, sees, and cannot fail to recognise, other instances of the influence of the mind upon the body. There is not a mental emotion which is not accompanied or followed by some corporeal manifestation.

"Every impression on sense produces a correspondent action on the brain, and thus rouses the soul to act according to the law of association—that is, according to innate propensity modified by experience. If the brain be healthy, and its proper connection be unbroken, we no sooner think than those nerves are excited which belong to the organs that put us in relation to the objects of our thought and desire. Thus, when a man thinks of what he loves, his features assume an appropriate expression, and every fibre of his frame is animated by his imagination. One who loves music, and whose body is well prepared for activity—that is, a person of sanguine temperament—requires to be under the strongest restraints of education to prevent his breaking out into a song or a dance when the sound, or even the memory, of a lively measure strikes his mind. A person who thus yields to excitement is one who trusts to impulse for his enjoyment, whose habit is the reverse of reflective, who can scarcely endure orderly discourse, and who never reads for the purpose of furnishing his mind with facts, or fortifying his reason with true principles. This condition of mind is most dangerous, because organization will express and perpetuate thoughts, and emotion will at length become permanent, which is madness; therefore, any person who is conscious of a tendency towards this state should at once commence a new course of training. Converse with nature, reader; exert the

mind, with a worthy object always in view; seek association with steady thinkers; abstain from sensual indulgence; thus you will conquer your lower state of self, and find the body and all its senses happily subservient to the soul, which, regarding its dignity as heir to an infinite and perpetual inheritance, would then no longer sport with existence, but walk abroad under the everlasting firmament, rejoicing that light is everywhere, and expecting to be rendered worthy, because willing, to commune with Omnipotence as indeed a friend.

"One man is less excitable than another, not because his ideas are fewer, his temptations feebler, or his thoughts less rapid, but merely because, his affections being better trained, he does not hastily associate all that passes in his mind with a feeling of his bodily self. But every idea is emotional with savages, with young children, and with fools, because they have not been subjected to moral restraints, and taught to resist impulse for the sake of spiritual advantage. It is only by forethought, or by intently aiming at a specific end, to the attainment of which lesser objects are regarded as, at best, but subservient, that a man endures patiently and with undiverted purpose. If his ambition thus absorb all minor passions, he will be phlegmatic, because he will conceal his feelings, and keep himself free from the transports of others by unnatural violence to his own heart. But does this power of self-possession for ulterior purposes altogether resolve itself into a certain proportion between the brain and the belly, or the blood and the muscles and absorbents? No. Napoleon was of the same temper of mind when a slim lieutenant at Valance, as when he fattened at Elba, or as when the vulture preyed upon his heart at St. Helena. Faith rules wherever it dwells, and enables a man calmly to keep the even tenour of his ways, whatever be the temperament of his fluids and solids, because it has a living power that grows with the demand upon it."

Passions, The Lesser.—The lesser passions of envy, jealousy, disappointment,

fretting, etc., may be all considered as modifications of the more important ones. Thus envy may be regarded as a phase of melancholy, jealousy as the outcome of intensity of love, and disappointment and fretting as akin to grief.

Passive Exercise for Invalids.

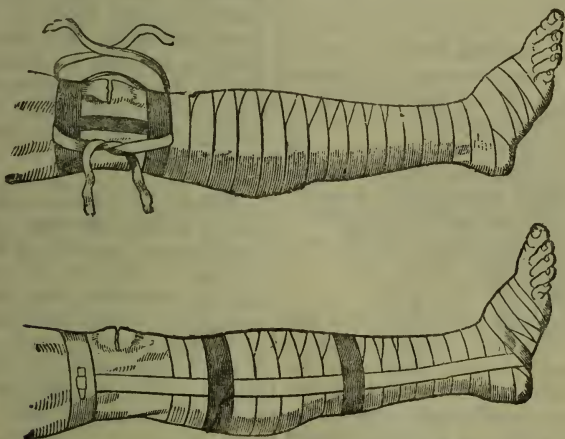
—See EXERCISE, PASSIVE, FOR INVALIDS.

Pastry (*Ital.* pasta, paste, akin to *Gr.* plasso, I mould).—Pastry, if properly made, may take its place, but it should be a very subordinate one, in the daily diet of the family. The so-called rich tart of the con-

of the muscles which extend the leg, and protects the front of the knee joint.

Patella, Fracture of the (*Lat.* patella, knee-pan).—This entails long confinement on the sufferer. The accompanying illustrations exhibit the nature of the fracture, and represent two methods of treating transverse fracture of the patella. The object is to approximate the two ends of the bone together, and maintain them in as close proximity as possible.

Patterns of Wall Papers.—See WALL PAPERS, PATTERNS OF.



MODES OF APPLYING BANDAGES, ETC., IN FRACTURE OF KNEE-PAN.

fectioner is more wholesome food than the ordinary plain domestic pie, which, from its usual mode of making, is apt to be heavy and indigestible. Pastry, to be good, should be rolled again and again; for it is by the process of frequent working that it becomes light. Light crispy pastry alone is to be recommended; heavy sodden crust, so-called, is to be avoided by all civilized beings.

Patella (*Lat.* patella, knee-pan).—The patella, or knee-pan, is well known. It is a small round bone constituting the projection of the knee. It increases the power

M. D.

Pauper Dietaries.—See PUBLIC DIETARIES.

Peach.—The kernels of peach stones contain an oil similar to that of bitter almonds. The peach is an agreeable and refreshing fruit, but it does not contain much nutritive matter. The quantity of sugar it contains is but small. The skin is indigestible.

In a good peach the flesh is firm, the skin thin, of a deep bright colour next the sun, and of a yellowish green next the wall; the pulp is yellowish, full of highly flavoured juice, the fleshy part thick, and the stone

R R

small. Too much down is a sign of inferior quality. This fruit is much used at the dessert, and is preserved in tins in America, whence it is imported into the United Kingdom.

Pears.—When ripe, pears can be liberally used by the majority of those in average health. When gathered, some pears are hard and tasteless, and these have to be stored for several months before they are fit for eating. Other varieties, again, ripen early, and in a very short time begin to decay. Of some kinds the fermented liquor, perry, is made.

Pears, Artificial Essence of.—There is an artificial essence of Jargonelle pears much used for flavouring “pear drops,” and other sweetmeats. This is a solution in spirit of amyl acetate. It is a most unwholesome and deleterious compound, and sweets flavoured with it should be avoided. It is supposed that the natural flavour of pears is partly due to this substance.

Peas.—Both in the fresh state and when dried, peas form a valuable article of diet, and contain a large quantity of caseine in a digestible form. The green pea contains more sugar and less caseine than when dried. Dried peas are a wholesome and nutritious addition to other kinds of food. When added to soup, they are agreeable and economical, and in the form of flour, when ground, they may be advantageously made into puddings, or bread with wheaten flour.

An analysis of 100 parts of dried peas gives the following constituents:—

Water	14.1
Caseine	23.4
Starch	37.0
Sugar	2.0
Gum	9.0
Fat	2.0
Woody Fibre	10.0
Mineral matter	2.5

or

Water	14.1
Flesh Formers	23.4
Heat givers	60.0
Mineral matter	2.5

Dry ripe peas, even when ground, require long but slow boiling, to render them fit for use. In common with other leguminous plants, and indeed with all products, whether animal or vegetable, that are rich in caseine, peas are apt to give rise to flatulence and colic. Peas and many other legumes are characterized by the presence of a bitter substance, which predominates in some varieties to such an extent as to render them unpalatable. This substance may be removed, however, in some measure, by soaking the seed or coarse meal for some time in water containing a little common washing-soda; the water should then be poured away.

Pea Soup.—This soup is by some considered to be particularly indigestible and unwholesome, but this is not the case, although it may not be well suited for delicate stomachs. For those who are possessed of a good digestion, it is a wholesome and nutritious food. Dried mint should be taken with it, and it is improved by the addition of some fat pickled pork cut up into the form of dice.

Pecuniary Value of Life (*Lat. pecunia*, money; from *pecus*, cattle, because cattle were the chief objects of sale and exchange in early times, and the oldest coins bore the impress of a sheep or ox).—A writer in the *Quarterly Review* has remarked that “some interesting statements were made by Dr. Farr, in the Supplement to the Thirty-fifth Annual Report of the Registrar-General, as to the pecuniary value of life. A certain amount of expense has to be incurred in every class before a child can attain such an age and such strength that it can earn its own livelihood. It is very difficult to estimate what the expenses of even a careful man who passes through

the ordinary university career must have been before he is able to earn anything for himself. Among the lower ranks the problem is simpler, though the facts and the general course of events have, making due allowance for differences in station, a considerable similarity.

"The value of any class of lives is determined by valuing first at birth, or at any age, the cost of future maintenance, and then the value of the future earnings. Thus proceeding, Dr. Farr found the value of a Norfolk agricultural labourer to be £246 at the age of twenty-five. The child is by this method worth only £5 at birth; £56 at the age of five; £117 at the age of ten; the youth, £192 at the age of fifteen; the young man, £234 at the age of twenty; the man, £246 at the age of twenty-five; £241 at the age of thirty; when the value goes on declining to £136 at the age of thirty-five; and only £1 at the age of seventy. The cost of maintenance afterwards exceeding the earnings, the value becomes negative; at eighty the value of the cost of maintenance exceeds the value of the earnings by £41.

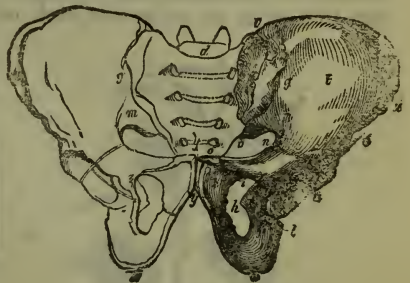
"A computation of this kind places the value of a population before us in a new light. We see how great the vigour of the productive activity of the inhabitants of these islands must have been, which has enabled the British Empire to make such vast strides in material wealth during the last forty-five years, while parting with so many of the ablest of the community to colonize other lands, and to carry to them that wealth which their labour would otherwise have been worth to the mother country."

Pelvic Cavity.—The pelvic cavity is formed at the sides, back, and front by the pelvis; and is partially closed above by membrane, muscles, and skin. In it lie the bladder, the lower part of the large intestines, and, in women, the organs of generation.

Pelvis (*Lat. pelvis*, a basin).—The name *pelvis* has been given to this irregular

structure of bone from its fancied resemblance to a basin. It is this portion of the bony framework that supports the spine.

The accompanying illustration represents the human pelvis, looked at from the front, the names of the various parts being as follows: *y y'*, the symphysis pubis; *h*, descending ramus of pubis; *h*, the obturator foramen; *m n o*, the horizontal ridge which constitutes the lower boundary of the internal iliac fossa—the space circumscribed by this line has been called the brim or superior strait of the pelvis; *u y' u'*, the notch presented by the great pelvis; *d*, the promontory of the sacrum; *i* and *t*, the internal iliac fossa, which form an inclined plane on each side fitted to direct the weight



THE HUMAN PELVIS.

of the viscera, which rests upon them, upwards and forwards. The circumference of the pelvic brim is represented by *g d g*; the anterior edge of the base of the sacrum by *m n*; the horizontal ridge by *n o*, the pectineal line, and *o*, the spine of the pubis. Its length is four inches. In the transverse direction, *m n*, it measures five inches. The two oblique diameters of the pelvis, *n g*, measure four and a half inches. In the female all the diameters of the upper strait are greater than in the male. *x y x* is the arch of the pubis. The transverse diameter, *w w* of the lower part of the pubic arch measures three inches. The superior circumference or base of the pelvis presents a great notch, *u u'*, in front, in the median line of which is the symphysis pubis, *y*; *o*,

the spine of the pubis; *o n*, the pectineal surface; *n n*, the ilio-pectineal eminence; *n u*, groove for psoas and iliacus muscles; *n*, anterior superior spinous process of the ilium, at which point it terminates; *u, v*, crest of the ilium; *a*, socket of thigh bone.

The female pelvis is distinguished by certain characteristics from the male. It has greater capacity to admit of the expansion of the uterus during pregnancy and for the expulsion of the child at birth.

Pepper (*Fr. poivre*; *Lat. piper*, pepper).—Of the aromatic or spicy condiments, the chief species are the different kinds of pepper, which are of a heating, stimulating nature. They possess powerful stomachic virtues, and are proper to be used with all food of an indigestible kind, or



PEPPER. (*Piper nigrum*.)

flatulent nature. They are best used in powders, as the whole of their virtue is then imparted, though with many people it is common to swallow them whole, in cases of indigestion or stomachic weakness.

Of peppers, the black and white are the most common of all spices, both in the East

and West Indies as well as in Europe. The use of pepper in warm climates is carried to great excess, where, indeed, it is necessary as enabling the body to resist and support the exhausting influences of the sun; in mild climates, however, it is less required, and should be used with a sparing hand, being better fitted for languid and debilitated stomachs than for those of a hale, sanguine habit.

The most stimulating of all the peppers is cayenne pepper, which is the pod of a variety of capsicum reduced to a coarse powder.

The quality of pepper is known by rubbing it between the hands; that which withstands the operation is good, that which is reduced to powder by it is bad.

Pepper is indebted for its pungency to about 2 per cent. of an essential oil: it contains also $2\frac{1}{2}$ per cent. of piperin.

Perch.—The perch is a nourishing food, and is of two sorts—the river and sea perch; it is of a firm texture, but a tender substance, easily soluble, not glutinous, not heating, nor remarkably stimulant. When young, its flavour is best, which it loses by age, and becomes rather ill-tasted. The best for use are the middle-aged; they should never be bought in the months of March or April, which is the spawning time; they are best caught in clear water, for muddy water and marshes vitiate their flavour.

Perchloride of Iron, Tincture of.—See MEDICINES, HOME.

Perfect Happiness.—See HAPPINESS, PERFECT.

Perfumes in Sick Room.—It should be borne in mind that the burning of pastilles or coffee, the sprinkling of perfumes, etc., does not purify the air; it is simply concealing, not cleansing, and substituting a pleasant for an unpleasant odour. Fresh air can only come from outside the house.

Pericardium (*Gr. peri*, around; *kardia*, the heart).—The name given to the membrane which surrounds and encloses the heart, as it were in a bag.—*See* HEART.

Pericementum (*Lat. per'i*, around; *cœmen'tum*, unhewn stone).—The pericementum is a tough, fibrous tissue which invests the roots of the teeth and lines their sockets. The cementum, or outer layer of the roots, receives its nourishment through it. It is owing to this fact that, after the death of its pulp, a tooth still possesses a certain amount of vitality, and is, therefore, retained in its socket—frequently for years—which would not be the case if it did not hold a vital relation to the jaw. The pericementum, moreover, while attaching the teeth firmly to their sockets, serves as an elastic pad or cushion, preventing, to a considerable extent, the damaging effects upon the teeth which would otherwise be experienced from accidental blows or other violence, as well as from thoughtless and unnecessary voluntary injury by efforts to crack nuts, untie knots, and other like foolish procedures.—*See* also GUM.

Pericra'nium (*Gr. peri*, around or about; *kranion*, the skull).—The name given to the very firm, thin, and closely attached membrane, that covers the skull. This membrane, when spoken of in connection with other bones of the skeleton, is called the *periosteum*.

Periodical Changes in Disease (*Gr. periodos*, a going round; from *peri*, around; *hodos*, away).—The connection existing between the state of the atmosphere and the progress of disease is one of the most interesting subjects of medical science. The following is a table drawn up some years since by Dr. Laycock, of York, which in some degree indicates the nature and connection of periodical changes:—

Table of the Meteoric and Physiological events occurring at the Barometric hours, during a solar day of twenty-four hours.

4 to 5 o'clock a.m.

Barometer at its minimum height.
Minimum of electric tension, nearly.
Intermediate minimum, variation east of magnetic needle.
Minimum of temperature.
Hour at which several flowers bloom.
Certain moths escape from the chrysalis.
Minimum consumption of oxygen.
Onset of cholera, epidemic diarrhœa, Egyptian ophthalmia, and quotidian ague.
Period of increased excitement in the insane commences.
Hours of alleviation of symptoms and of sleep in hepatic and infantile fever.

4 to 5 o'clock p.m.

Barometer at its minimum height.
Minimum of electric tension.
Minimum variation, east of magnetic needle.
Certain moths escape from the chrysalis.
Termination of a paroxysm of quotidian ague.
Onset of a quartan ague.
Exacerbation of fevers, accession of hectic fever.
Period of increased excitement in the insane begins.

8 to 10 o'clock a.m.

Barometer at its maximum height.
Maximum of electric tension.
Maximum variation east of magnetic needle.
Maximum excitability of the circulation.
Maximum of muscular powers.
Period of increased excitement in the insane ends.

8 to 10 o'clock p.m.

Barometer at its maximum height.
Maximum of electric tension.
Maximum variation east of magnetic needle.
Meteoric lightning and thunderstorms appear.
Certain insects escape from the chrysalis.
Consumption of oxygen at its minimum.
Minimum of muscular power.
Minimum excitability of the circulation.

Hour of natural sleep.

Period of increased excitement in the insane ends.

Paroxysm of a quartan ends.

Referring to the above, Dr. Laycock remarks:—"What effect have barometric variations on animal life, and especially on the phenomena of epidemics?" Huxham specially refers to the phenomena of intermittent fevers, as being probably influenced by barometric variations, through the varying pressure of the atmosphere on the veins. More recently, Sir D. Barry took up both the pathological and physiological views of Huxham, and in the same spirit observes:—"1st. It being now evident that the blood in the veins is placed under the influence of atmospheric pressure, it would be curious to trace the connection which appears to exist between diseases generally—intermittent fevers, for example, and the daily atmospheric variations. The reader will see at once that facts countenance these speculations. 2nd. Has the electricity of the air, or the magnetism of the earth, any influence on vital phenomena? If any, we may infer, *à priori*, that the result would be seen in the nervous system. Now, according to the table, the period of increased excitement in the insane commences when the electric tension of the air, and the variation east of the magnetic needle, are at a minimum, and *vice versa*. The unpleasant influence of thunderstorms is well known to persons of nervous temperament, and to those predisposed to disease of the nervous system; and as these occur most usually in the evening, we should look for nervous attacks at that time."

Periodical Fever.—See FEVER, CHARACTERISTICS OF.

Periods of Life.—See LIFE, PERIODS OF.

Perios'teum (*Gr.* *peri*, around or about; *osteon*, a bone).—The very firm, thin, and closely attached membrane with which

all bones are covered. The term *pericranium* is applied to this membrane when it covers the skull or cranium.

Periscopic Glass.—See SPECTACLES.

Peritoneum (*Gr.* *peritonaiōn*, that which is stretched over or around; from *peri*, around; *teino*, I stretch).—The thin membrane which covers or lines the inner surface of the abdomen or cavity in the body which contains the viscera or bowels. Although it is thin, it is nevertheless of great strength, as it is a powerful auxiliary in retaining the bowels in their proper places, although it permits of perfect freedom of motion when necessary.

Peritonitis (*Gr.* *per'itonai'ōn*, membrane that covers the whole surface of the abdomen; from *peri*, around; *teino*, I stretch; and *itis*, an affix denoting inflammation).—This disease is inflammation of the membrane which lines the abdominal cavity, and is usually caused by diseases or wounds of the abdomen, or of the organs covered by the peritoneum. Very rarely it occurs in previously healthy persons from simply catching cold. Over-exertion, straining in lifting heavy weights, sudden blows or kicks, may bring on the inflammation.

Peritonitis, Symptoms of.—These generally begin with severe pain at the seat of the injury, and a feeling of great depression, followed by fever. The pain is, however, the most characteristic symptom, and is increased by any pressure, even that of the bedclothes, on the abdomen. The patient lies on his back with his knees drawn up, and is afraid to speak, and almost to breathe. The abdomen is puffed up, the intestines being filled with gas. There is obstinate constipation, and sometimes continued vomiting. All these symptoms become very decided in a few days, and whether the patient is to die or live can generally be determined in about a week.

If by that time the pain, temperature, and pulse subside, there is ground for hope.

Peritonitis, Treatment of.—

There will be but little to do beyond keeping the room well aired, its temperature even, and giving all the medicines promptly. See that the patient makes no effort whatever to relieve the bowels, or to use the urinal frequently. The uncomfortable desire to do so is due to pressure caused by distention of the intestines. If cold applications are ordered, use a pocket-handkerchief squeezed out in cold water and applied very gently: cover it with very thin rubber-sheeting or oil-silk, and re-wet it always before it becomes warm. Great mischief frequently arises from carelessness in this matter. It is better not to apply the cloth than to allow it to become warm.

If the patient can bear ice, half fill an oil-silk or rubber bag with it, pounding it small by folding it in one end of a towel and striking it hard against a stone hearth. The bag must be large enough and the ice fine enough to mould themselves to the abdomen. Snow is better than ice when it can be obtained. The weight of the bed-clothes must be kept off by means of a cradle contrived for the purpose. The patient's feet and knees must be kept warm, if necessary, with a separate wrap.

Should opium be ordered, watch the breathing, counting the respirations, and keeping strictly to the dose ordered. If exactness in giving medicines is of great importance in other cases, it is doubly necessary here.

Should convalescence take place, there will be opportunity for nursing, and too much care cannot be given to the regulation of the patient's diet and times for eating. He must eat very sparingly at first—gruels, broths, milk, etc.—and return to solids only with the doctor's permission. Flannel must be worn next the abdomen. The bowels should be moved very slightly daily. Too early exertion from any cause might easily produce a relapse after convalescence has begun.

Permanent Teeth (*Lat.* *permanens*, enduring; from *per*, through; *maneo*, I remain).—The permanent set of teeth consists of thirty-two—sixteen in each jaw. Those in the upper jaw are called the superior; those in the lower, the inferior. They are divided into four classes, viz., incisors, cuspids, bicuspid, and molars.

The illustration on the next page represents the permanent teeth—superior and inferior—of the left side. The incisors—four in each jaw—are so named from the Latin word *incidere* (to cut), on account of their sharp edges. The second class comprises four teeth—two in each jaw—called cuspids or *cuspidati* (singular, *cuspidatus*) from the Latin word *cuspis* (a spear), because they terminate in a point. They are commonly known by the name of canines, or those of the upper jaw as eye-teeth, and those of the lower jaw as stomach-teeth. They are situated on the outer side of each lateral incisor. The third class comprises eight teeth—four in each jaw—called bicuspid or *bicuspidati* (singular, *bicuspidatus*), from the Latin words *bis* (twice) and *cuspis* (a spear)—double-pointed. They are situated immediately behind the cuspids, holding an intermediate relation to them and the molars, and are known as the first and second bicuspid. The fourth class consists of twelve teeth—six in each jaw. They are called molars—Latin *molares* (singular, *molaris*)—from *molere* (to grind as in a mill). They are situated at the back of the bicuspid, and are known as the first, second, and third molars. The first, because of the time of their eruption, are called the sixth-year molars; the second, for the same reason, are known as the twelfth-year molars; and the third, for a like reason, are denominated the wisdom teeth, because they are not erupted until the individual has reached maturity.

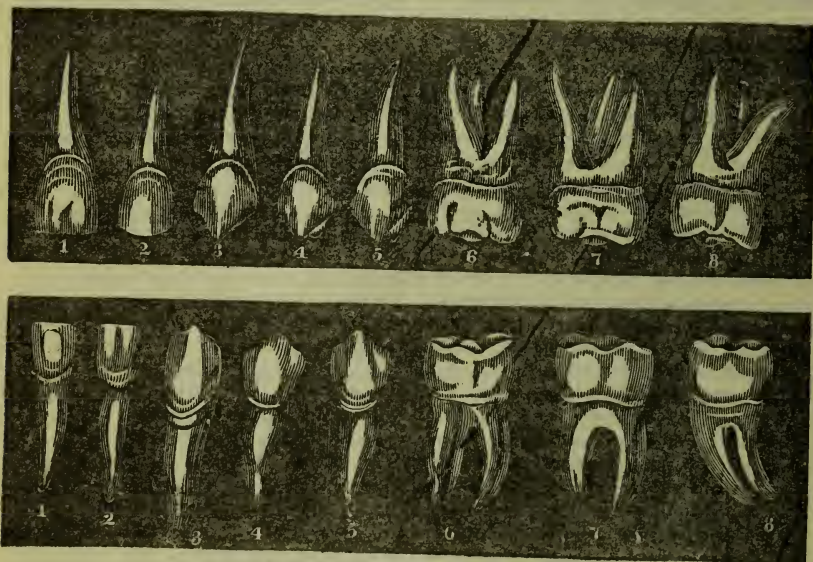
Permanganate of Potash is a soluble substance particularly convenient of application, and remarkably certain and efficient in its effects as a disinfectant and deodorizer. Its employment is limited

mainly to local applications and to general effect upon the atmosphere of contaminated apartments by means of evaporating cloths saturated with a strong solution of the permanganate. Various preparations extensively advertised are but solutions of permanganates in water, and may be cheaply prepared by those desiring it.

Permanganate of Potash a Test for Organic Matter in

drink than cider, from its showing less acidity. It is particularly recommended as counteracting the poison of mushrooms or other fungous productions, and in that case is improved by an addition of alcohol. The best perry, like the best cider, is the rough kind, and in its colour and taste it resembles Rhenish wine.

All liquors of this kind, which are liable to flatulence and acidity, are much improved by their junction with sugar and aromatics,



PERMANENT TEETH OF THE LEFT SIDE.

Water.—See CHEMICAL TESTS FOR WATER.

Perry.—Perry, like cider, differs according to its taste, age, and mode of preparation. The first depends on the maturity or kind of fruit of which it is made—the second depends on the time it is kept, which requires much attention, as perry does not so soon fine as cider—and the third lies entirely in the perfection of its fermentation. Perry is in general reckoned a safer

as nutmeg and ginger; and this is the more necessary as such liquors have been suffered to acquire often a deleterious quality, or impregnation of lead, from the vessels in which their fermentation takes place.

For making perry, the pears should not be quite ripe; and the admixture of some crabs will add much to the sprightliness of the taste. Perry is thought by some to resemble champagne more than gooseberry wine does; and it is said, when of the best quality, to have been at times sold instead of champagne.

Perspiration Checked by Cold (Lat. *perspiro*, I breathe through; from *per*, through; *spiro*, I breathe).—A notable method by which cold acts as a disease-producing agent is by checking perspiration, thus preventing the carrying off of injurious worn-out materials of the body by that great avenue of purification, and, as a consequence, throwing more work upon the lungs and other internal organs, the office of which is largely to perform the labour which the skin is unable or unwilling to perform.

Perspiration, Heat of Body Reduced by.—See HEAT OF BODY REDUCED BY PERSPIRATION.

Perspiration, Office of.—The office of cutaneous perspiration is largely to regulate the temperature of the body by the evaporation from the surface; the cooling effect of fanning results from the evaporation of the moisture on the skin. The more violent efforts of the skin to reduce temperature are seen naturally in warm weather, or artificially in the Russian or Turkish hot-air bath, when, as the body becomes more and more heated, the glands secrete more and more copiously. All know that if one sweating profusely get in a current of air great cooling will result.

It can be readily understood how, with this vast secreting surface exposed to the changes of the atmosphere, we may easily "catch cold" from chilling the surface in a draught, or from exposure too thinly clad, and by a "check of perspiration" cause congestion of internal organs.

Peter the Great.—See GREAT THINKERS.

Petit Verre.—See AFTER DINNER.

Pharynx (Gr. *pharungx*, gullet).—The pharynx is that large black space into which we look when the mouth is opened wide.

Keeping the relations of the food and air tracks in mind, let the reader look into the

throat of an individual whose tongue is kept flat down on the floor of the mouth by a paper-cutter, spoon-handle, or something of that kind. This will expose to view the interior of that portion of the throat (the middle portion of the pharynx) which is common to the two great avenues by which air and food are conveyed into the interior of the body. The avenue for air, or the *respiratory track*, is a double one at top, reaching the pharynx by the interior of the nose above, as in ordinary breathing, or by the mouth in front, as in occasional breathing.

The back portion of the throat is the posterior wall of the pharynx, and is continuous with the back wall of the gullet, or food-pipe, the *œsophagus*. Like the palate, it is chiefly muscular in structure, and is covered by a continuation of the same lining, or mucous membrane. It is loosely attached to the spinal column, and can be moved upon it.

The pharynx continues upwards along the spinal column, behind the palate, until it reaches the base of the skull, when it bends forward into a vaulted roof, which has much the shape of the crooked forefinger. It is often easy to pass the finger up behind the palate of an individual, and feel this roof of the pharynx.

Pheasant (Gr. *phasianos*; from Phasis, a river of Colchis, in Asia, from which, it is said, the pheasant was first brought).—The pheasant is preferable in flavour to the domestic fowl, its flesh being shorter and more delicate, and also more alkaliescent. It is best in autumn; that is to say, in October, when pheasant-shooting commences, and in the three following months, and should be eaten roasted.

M. Ude says: "It is not often that pheasants are met with possessing that exquisite taste which is acquired only by long keeping, as the damp of this climate prevents their being kept as long as they are in other countries. The hens, in general, are the most delicate. The cocks show their age by their spurs. They are only fit to be eaten when the blood begins to run from

the bill, which is commonly six days or a week after they have been killed. The flesh is white, tender, and has a good flavour, if you keep it long enough; if not, it is not much different from that of a common fowl or hen."

Phénol Sodique.—Perhaps no single article is more useful as a wash in various conditions of the mouth than phénol sodique—a preparation made from tar. It is an antacid, an astringent, a sedative, a styptic, an antiseptic, and disinfectant. As a wash for the mouth it is highly useful (when there are no local exciting mechanical causes) in that class of cases of soft, spongy, swollen gums which bleed at the slightest touch. It checks excessive bleeding after extraction, and relieves the subsequent soreness of the gums. It gives prompt relief to the distressing pains which sometimes follow extraction: corrects unpleasantness of the breath caused by decayed teeth, or by unhealthy secretions of the mouth, while its antacid and antiseptic properties make it a valuable agent in correcting acidity and preventing putrefaction. It may be used, to meet varying indications, diluted, more or less, from half a teaspoonful to a table-spoonful in a tumbler of water.

Phenomena of Touch (*Gr. phainomenon*; from *phaino*, I make to appear).—There are some very curious phenomena belonging to the sense of touch. Not only is tactile sensibility to a single impression much duller in some parts than in others—a circumstance which might readily be accounted for by the different thickness of the cellular layer—but the power of distinguishing double impressions is very different. Thus, if the ends of a pair of compasses (which should be blunted with pointed pieces of cork) are separated by only one-tenth or one-twelfth of an inch, they will be distinctly felt as two, if applied to the tips of the fingers; whereas if applied to the back of the hand in the same way, only one impression will be felt; and on the arm they may be separated for a quarter of

an inch, and still only one impression will be perceived.

Accurate experiments have been made in different parts of the body, and it has been found that two points can be distinguished by the tongue, if only one-twenty-fourth of an inch apart; by the tips of the fingers if one-twelfth of an inch distant; while they may be an inch distant on the cheek and even three inches on the back, and still give rise to only one sensation.

Philosophy of Clothes.—See CLOTHES, PHILOSOPHY OF.

Phlegmatic Temperament (*Gr. phlegmaticos*; from *phlegma*, phlegm; *Lat. tempero*, I mix in proper proportion; from *tempus*, time).—The phlegmatic temperament is characterized by a general laxity and torpidity of the whole system. The muscles are soft; the skin full, but puffy and flabby; the complexion, hair, and eyes, pale and colourless; the joints large; the manners and movements languid, and the mind unexcitable.

Phthiriasis (*Gr. phtheí'ria'sis*; from *phtheir*, louse).—*Phthiriasis* (Lousiness) and *Scabies* (*the Itch*) are two diseases which comprise the groups of animal parasite affections of the skin; and although they are rare among the better classes in this country, they may be, and are, occasionally found even in the best society.

Phthiriasis, or *pediculosis*, is the medical name given to the state of lousiness, or the presence of lice and the eruption which they produce. There are three varieties of lousiness recognised, which are produced by three varieties of the louse: namely, *phthiriasis capitis*, *phthiriasis corporis*, and *phthiriasis pubis*.

Phthiriasis Capitis (*Lat. caput, capitis*, the head).—Lousiness of the scalp, caused by the head-louse (Fig. 1), sometimes results in a very considerable eruption of raw, exuding surfaces, covered with crusts, which may mat the hair together.

The seat of this is very commonly at the lower and back part of the scalp beneath the mass of hair there, especially in girls. Among the better classes, however, there is generally but little eruption, except a few scratched points. Not at all infrequently we are utterly unable to find a single louse upon the head, so carefully have they been removed by careful combing and wash-

hair to get rid of them, for after thorough treatment they usually come off quite readily.

Phthiriasis Capitis, Treatment of.—A common mode of treatment is the thorough soaking of the hair with the ordinary kerosene oil for twenty-four hours, fresh oil being added three times during that period: the head in the meantime is to be bound up,



FIG. 4.—*PEDICULUS PUBIS*:
CRAB-LOUSE.



FIG. 2.—*PEDICULUS CORPORIS*:
BODY-LOUSE.



FIG. 1.—*PEDICULUS CAPITIS*:
LOUSE OF THE HEAD.

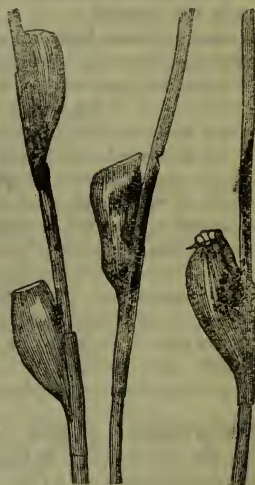


FIG. 3.—NITS, OR EGGS, OF THE
PEDICULUS CAPITIS, OR HEAD-
LOUSE, ATTACHED TO HAIRS.

(Greatly magnified.)

ing. But the *nits*, or eggs, are quite as characteristic, and are just as surely indicative of the state as though the insects were themselves found; for they can and certainly will hatch out, and the scalp free from pediculi to-day will have many there to-morrow. These nits are well shown in Fig. 3. It is useless to try to remove these by combing, for they adhere very firmly to the hairs, and can only be removed when they are dead. It, however, is quite unnecessary to cut the

to keep in the volatile gases which thereby penetrate the nits. At the end of twenty-four hours the scalp is thoroughly washed with soap and water, and most of the eruption will have disappeared, the lice will all be dead, also the nits. The covering which has been worn on the head should also be treated by baking in the oven on a board.

This is by far the most rapid and sure way of getting rid of these pests; but some may object to it. Lotions of carbolic acid and

corrosive sublimate are used medicinally, but are hardly safe for general use.

Phthiriasis Corpus (*Lat. corpus, corporis*, the body).—The body-louse (Fig. 2), causing *phthiriasis corporis*, is the largest and the easiest to get rid of. They are rarely found on the body, but must be searched for in the folds of the under-clothing, especially where it presses, as on the shoulders and hips. Here will also be found the *nits* or eggs, which are small, white oval specks, attached to the loose fibres of the garment.

In some instances, body-lice are the cause of prolonged itching, which results in so much scratching that very troublesome sores may result; and if the proper diagnosis be not made and the pediculi removed, no progress will be made towards cure.

Happily the treatment of phthiriasis of the body is very simple and effective, and is embraced in the word cleanliness. Complete changing of underclothing, bed linen, etc., together with warm baths, is all that is required; *except* that, in order that the *nits* on the clothing should not hatch out, the garments should be baked or boiled each time for some weeks. Occasionally the outer garment may contain them.

Phthiriasis Pubis (*Lat. pubes, pubis*, the groin).—This is the name given to the condition excited by the third variety of louse, shown in Fig. 4, commonly known as *crab louse*, or “crabs.” It infests the hairs at the covered portion of the body, though it has been seen in the whiskers, eyelashes, and eyebrows. It clings closely to the hair when it comes out of the skin, and appears often as a little scab or crust, which is often hard to remove, so tightly does the louse cling to the hair with his crab-like claws. The irritation caused by these animals is often very great, and the cause of the itching often goes long unrecognised.

Phthiriasis Pubis, Treatment of.—Any of the mercurial ointments suffice

to destroy this parasite, but there is danger of producing salivation if they are used too freely.

Physic, Aim of.—See AIM OF PHYSIC.

Physical Effects of Fear.—See FEAR, PHYSICAL EFFECTS OF.

Physical Thermometer, Moral and.—See MORAL AND PHYSICAL THERMOMETER.

Physical Training of Young Women.—See GYMNASTICS FOR GIRLS.

Physician and Surgeon, Distinction Between (*Gr. phusicos*, physical, or pertaining to nature; from *phusis*, nature; contraction of *chirurgion*; from *Gr. cheirourgos*; from *cheir*, the hand; *ergon*, work).—It seems as well in a popular work such as this, to explain simply the distinction between a physician and a surgeon. The physician is the holder of a doctor's degree from some university, and the title of doctor belongs exclusively to him. A physician, as such, can legally make no charge for his visits, and cannot recover by law. He is forbidden to make profit on his medicines, and therefore only writes prescriptions for the chemist or apothecary to make up. He is also prevented from performing the smallest surgical operation—such as drawing a tooth, vaccinating, or applying a bandage. A surgeon is not entitled to be styled doctor, and must invariably hold a diploma to practise from one or other of the Colleges of Surgeons in England, Scotland, or Ireland. Many medical men, who practise generally, and do not confine themselves to consultations, qualify in both directions, and are thus entitled to the appellation of “doctor,” as well as being able to charge for attendance and medicine, and to perform all operations without infringing the law of medical practice.

Physicians, Duration of Life in.—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Physics and Physiology of Hearing (*Gr. phusis*, nature; *logos*, discourse).—Sound is motion imparted to the auditory nerve. This motion is usually conveyed by undulations in the air. A shock from a sounding body, communicated to the atmosphere around it, passes by a wave of undulation away from it on all sides which are free, as the waves ripple the surface of a pool after a pebble has been thrown in. Sound moves at the rate of 1,090 feet in a second, in air, at the freezing point. The velocity increases as the temperature is raised. The water must represent the atmosphere, the pebble the source of sound in the vibrating body, the ripples on the surface of the pond the sound waves in the air, and the shore of the pool the ear, or the receptive point of the sound-waves. The perception by the ear of this movement in the air—*i.e.*, of these vibrations as they are called—is hearing.

Physiognomy of Ear (*Gr. phusis*, nature; *gnomon*, one who knows; from *gignos'ko*, I know).—Like many other parts, the ear has, in man, a medium size in proportion to the rest of the body. The extremes, of both largeness and smallness, indicate therefore a deflection towards the lower animal world; the former is often seen in idiots with ill-shaped heads. In less than these extremes, large ears, including all such as are longer than the nose, are signs of timidity and defect of mental power, especially when their upper parts are very large. They have their natural types in the large long ears of many timid animals. Small ears, if not extremely small, imply mental courage; their type is in those of the carnivora.

The trimming and levelling of the ear border, so that it is not turned over, has generally a bad import. It is animal-like; and with an angular upper border, it gives the character of low sensuality, which the old masters painted in the ears of Fauns. A deeply and roundly sculptured ear is a sign of intellectual capacity; and one that is largely and broadly hollowed out often

occurs in men with great plastic talent. Smoothness and want of contrast among the several windings of the ear imply feebleness of mind. Ears that stand out belong generally to persons in whom the sense of hearing is dominant, such as the musical, the mysterious, those with strong memories, and the timid. Close-lying ears are more frequent among those in whom sight prevails, as the light-headed, the reckless, the courageous.

A popular feeling is that a small and well-shaped ear in man is not only a beauty, but a sign of good breeding; while, on the other hand, a large, prominent auricle is a sign of vulgarity. Giotto, in his drawing of Envy, in the chapel of the Arena, at Padua, represents the auricle as superhuman in size. The position of the auricle may be a national peculiarity, as in the Egyptians, in whom the auricles are placed high in the head.

Considerable interest has been aroused respecting the meaning of a little point or prominent fold very often found at the upper posterior edge of the auricle in man. Both artist and anatomist have been attracted to these prominences, which have been found in the ears, not only of men, but of monkeys. Advocates of the theory of the descent of man from the monkey, thought they had found in this little blunt point on the auricle another reason for their belief; but these defects in the auricle have been shown by Ludwig Mayer, of Germany, to be the results of inflammation before birth, and therefore they are congenital. They are, in fact, remnants of the cartilage of the auricle, the greater portion of which has been eroded by disease, as above stated.

Physiognomy of Eye.—A writer in the *Quarterly Review* has said:—"In the colours of the eye, both the white and the various tints of the iris must be studied. In a clear, pure white, we see, intuitively, a mind that might be so described; a dirty or yellowish white makes us suspect the opposite character; a white that is too blue, like that of a delicate child, is significant of an immature mind; one that is bloodshot, if it

does not confess to intemperance or overwork, suggests plethora and violence of temper.

"Dark blue eyes are most common in persons of delicate, refined, or effeminate nature; light blue and, much more, grey eyes in the hardy and active. Greenish eyes have generally the same meaning as the grey. Lavater says they are, 'in some sort, a distinctive sign of vivacity and courage.' Hazel eyes are the more usual indications of a mind masculine, vigorous, and profound; just as genius, properly so called, is almost always associated with eyes of a yellowish cast bordering on hazel.

The brightness and the dulness of the eye are as evident in their opposite meanings as are the contrasts of light and darkness. And scarcely less clear is the glance or flash of the eye, like a light, to illuminate and show the depth of meaning in every expression in which it appears. A volume might be written on it, inexplicable as it is, and in each person so inimitable by others, and therefore so characteristic, that, as Carus suggests, instead of saying, 'Le style c'est l'homme,' we might more justly say, 'Der Blick ist der Mensch.'"

Physiognomy of the Teeth.— See TEETH, PHYSIOGNOMY OF THE.

Physiological Effects of Bathing.—See BATHING, PHYSIOLOGICAL EFFECTS OF.

Physiology.—This science shows us the functions and uses of the different parts and organs of the system. It examines the machine while in motion, and explains the various processes by which it is sustained, replenished, and made to grow, live, and act—such processes, for example, as digestion, nutrition, and the circulation of the blood.

Physiology of Skin.—In regard to what might be properly called the *physiology of the skin*, a few points may be considered with advantage. As already stated

with reference to the sudoriparous or sweat glands, the skin is one of the great *emunctory*, or excreting, organs of the body, and shares very largely with the lungs and kidneys the office of removing the superfluous water from the system. Thus the skin removes by exhalation somewhere about two pints of liquid daily, the kidneys about the same amount, and the lungs not much over one-half or two-thirds as much. It can, therefore, be readily understood how a "check of perspiration" acts disadvantageously by throwing extra work upon these organs. These three great agents for eliminating or removing the water from the system act in harmony, and interchange in their duties more or less. Thus, in cold weather, when the skin perspires less, the kidneys are more active, and their secretion, as well as that of the lungs, is more profuse; hence the great danger of their becoming inflamed during this season; and in summer, when the perspiration may be profuse, it is a common observation to find the urine more scanty.

This *vicarious* or interchanging action of these organs is frequently taken advantage of in medicine, as when, in such maladies as Bright's disease of the kidneys, the quantity of their secretion is diminished, and the skin is caused to act profusely and remove the water which threatens dropsy and endangers life. In like manner, in certain diseases of the skin we find great advantage from giving remedies which increase the secretion from the kidneys. Also in pneumonia, where the power for work of the lungs is seriously impaired, we keep the skin in good action by poultices, warmth, ipecac, spirits of mindererus, etc. In some general diseases we act upon all these means of elimination; and the courses of treatment at the various mineral springs derive a large share of their benefit from their action upon the skin and kidneys.

The secretion from the sweat glands is almost entirely pure water, there being no less than 995·57 parts of water in each 1,000 parts of the perspiration, and the largest other ingredient by far is common salt, or

chloride of sodium. But under certain circumstances, as in high fever, severe disease of the kidneys, and in gout, the perspiration may contain urea, a poisonous substance which in health is largely removed by the kidneys.

A very great part which the skin plays in the physiology of the system, as stated already, is that of regulating the temperature of the body. Thus, while certain organs situated internally, mainly the liver and the lungs, together with the tissues generally, are day by day, hour by hour, and minute by minute producing heat by means of the *oxidation* or combustion of the elements of food and tissue into substance and force (just as the same food elements if *burned* or *oxidized* outside of the body would give forth heat), the skin is continually radiating or giving off the heat; and by the proper balance of the two, the temperature of the body is always kept at an even point—about 99° F. As the traveller approaches the colder Arctic regions, instinct leads him to consume more of the fatty, carbonaceous, or heat-producing foods, and his feelings prompt him to clothe the surface more warmly in furs, etc., to keep in the heat which he is continually making, and which is necessary to his life.

Just as lives are lost from alcoholic liquor used as a stimulant in the Arctic regions in place of the heat-producing oils, so, by wilful neglect to preserve the heat which is produced, even in more temperate climes, we have many lives lost every year.

Pia Mater.—See NERVES.

Pickles.—Pickles are merely vegetable receptacles for vinegar, but the vegetable being hardened by the acid renders it somewhat difficult of digestion, and therefore pickles are not to be much recommended. The pickled onion seems to be among the most wholesome of this sort of condiment.

Piercing for Earrings.—Piercing the ears is not so common as it once was amongst us, and it is possible that the time is not far distant when sensible people will

cease to perpetuate this relic of barbarism, but so long as it exists it demands a word of caution. It is usually done by jewellers, and consequently some important points may be unknown to them.

In the first place, the instrument used for piercing the lobule should be thoroughly cleansed after each operation, otherwise a small quantity of animal matter may remain on it, undergo putrefaction, and thus poison the next person operated on. Diseases, too, could thus be communicated from one individual to another. Another point to remember is, that nothing but the soft lobule should be pierced. Where this is small or hard, the greatest care is necessary to insure against perforating the cartilage, which, in all probability, extends into the lobule.

Earrings are sometimes torn from the lobule, thus causing a slit, which heals, leaving an ugly deformity in the shape of a kind of double lobule. In one instance, the writer saw a lobule that had been torn twice, thus leaving two permanent slits in it, and giving the ear a fringed appearance. After the wound is made, properly fitting together the raw edges would prevent the deformity; but the latter once formed by healing wrong, can be corrected only by the surgeon's knife.

Pigeon.—The pigeon is a fowl of great use. Of this fowl there is a great variety of species, but the domestic pigeon is more in use than any other. It forms a food of a very heating, dry nature, is highly alkaline, and is best when young. Pigeons are at all times in season or fit for use, and may be dressed in any form with equal advantage. The different species differ only in their degree of tenderness; but their general flavour and qualities are the same. So heating is the nature of this bird that externally applied it is said to produce inflammation.

Pig, Sucking.—See PORK.

Pike.—The pike is a fish of prey, and feeds on the smaller species: hence it sometimes gets the name of the water wolf. Its

flesh is short, compact, and close in its parts. The river pike is the best of this species and considered as the least heating, although somewhat hard of digestion and lying heavy on the stomach. It differs, however, much in different countries; it is also best in the winter season. This fish has been recorded as very long-lived.

Pilchard.—The pilchard is a small fish, larger and thicker than the anchovy, and very highly flavoured. It is caught at the end of summer and in the autumn off the South coast of Devon and Cornwall, where they are salted for winter use, and also for exportation to Southern Europe, where they are very much used as food in many countries, particularly in Portugal and Spain. They are very fat, are excellent fresh or salted, but lose much of their flavour by pickling.

Piles, Electuary for.—See ELEC-TUARIES.

Piles, External (*Lat.* *pīla*, a ball; *exter'nus*, outward).—The swellings known as piles or hæmorrhoids, which are situated in the region of the anus, and which by their size and their liability to irritation and inflammation, cause much trouble and uneasiness, and sometimes intense pain. These swellings may be caused either by circumscribed skin just within the anus, or of enlarged folds of the mucous membrane of the terminal portion of the gut, which folds are often protruded from the anus. In the former case, the affection is called external piles; in the latter internal piles.

External piles consist in a collection, just without the margin of the anus, of rounded hard tumours, covered by thickened skin, and of prominent ridges of skin. These growths at first cause little or no pain, but after a time one or more of them may become irritated and inflamed, and then give rise to very acute pain, with throbbing and a sense of great heat, and to a constant desire to go to stool. The symptoms pass off in the course of three or four days, but

the attacks are frequently renewed, and the piles gradually enlarge, and invade the lower portion of the intestines. This affection originates in distention of the veins about the anus in consequence of obstruction to the circulation.

External piles are met with generally in those who follow sedentary employments, and those who, in consequence of indulgence in highly seasoned foods and in alcoholic drinks, suffer from congestion of the liver. Much horse exercise, long continued standing, and constipation are also causes of external piles.

Piles in Pregnancy.—This is another affection from which the pregnant female is liable to suffer, and one which gives rise to considerable pain and annoyance. It is an enlargement of the veins at the lower part of the bowel, to which the name of piles or hæmorrhoids has been given.

This condition is one which results from pressure upon the hæmorrhoidal veins. A congested state of these vessels is first set up which, unless relieved, will ultimately give rise to piles. The mechanical pressure exerted by the enlarging womb is thus a frequent cause of this condition. Piles sometimes occur during the early months of pregnancy, while the womb is yet in the pelvic cavity, and disappear about the fourth or fifth month, when it rises into the abdomen.

Another frequent cause of piles is the accumulation of hardened fæces in the lower bowel. When the condition of the bowels has been neglected for some time, the hardened masses which accumulate in the lower part of the gut give rise to irritation, and by the congested state of the vessels to which this irritation gives rise, piles are produced. Their presence creates a disagreeable feeling of heat and pain, and much uneasiness is caused on the patient attempting to walk from the irritation to which the movements of walking give rise. They frequently become congested and very painful.

On their presence being detected, no time

should be lost in endeavouring to get them removed. If the bowels have been acting sluggishly, attention must be paid to them; and if hardened masses have been allowed to accumulate in the lower bowel, no relief will be afforded till they are removed. For this purpose a gentle dose of castor oil may be taken, or the patient may use instead an enema of soap and water or gruel, with one or two tablespoonfuls of castor oil added. A very good preparation to administer as a laxative when piles are present, is the compound liquorice powder of the British Pharmacopœia. Of this, one teaspoonful should be taken for a dose. The confection of sulphur given in similar doses is another preparation of much value in this condition. If the piles are very painful, they should be fomented with warm water every night at bedtime, or with an infusion of camomile flowers and poppy-heads.

Piles, Internal (*Lat. internus*, inward; from *intus*, within).—The presence within the anus of large, rounded, and soft tumours covered by red mucous membrane is attended with more serious symptoms. These internal piles, when large, come down through the anus from time to time, generally when the patient is at stool, and become engorged with blood and very painful. Evacuation of the bowels gives rise to a burning or throbbing sensation, and as the piles increase in size, becomes more and more difficult. A dull pain across the loins is complained of, and occasionally the urine cannot be passed in consequence of irritation at the neck of the bladder. The most serious symptom is bleeding, which occurs during the evacuation of the bowels, when the piles are protruded and compressed by the anus. The blood is red and arterial, and is often passed in considerable quantity. In addition to the discharge of blood, there is in most cases a constant flow of thick, slimy, or purulent fluid. These growths, like external piles, are sometimes inflamed. Then, in addition to intense pain and other severe local symptoms, there is high fever. Inflammation of internal piles sometimes

ends in mortification and in expulsion of the mass of abnormal growth from the rectum.

Piles, Internal, Causes of.—

The causes of internal are similar to those of external piles. Congestion of the liver, causing venous obstruction in the intestines, and direct irritation of the walls of the intestines are the conditions which most frequently give rise to this affection. The latter condition is often due to an immoderate use of purgatives, especially aloes.

Piles, Internal, Treatment of.—

The general treatment of piles, both internal and external, consists in removing congestion of the veins of the liver and intestines, in keeping up the strength and health of the patient and in avoiding or alleviating the results of certain conditions favourable to the development of the disease. The patient should restrict himself to a carefully regulated diet, and abstain from highly seasoned dishes, pastry, and spirits; wine and beer had better also be done without. Walking exercise is to be recommended, and during the summer months, sitting in the open air. Riding on horseback, or in a jolting vehicle, is to be regarded as positively injurious. The affected region should be well bathed every morning with cold water, and then carefully dried. To external piles may be applied lead lotion or a weak solution of alum. Hazeline is an excellent application in bleeding piles. For both external and internal piles the compound gall ointment is a very useful application. When internal piles protrude after each evacuation, they should be sponged over with cold water, or a solution of alum, or be smeared with gall ointment. The bowels ought to be kept in daily action by some mild aperient, as rhubarb in the form of a pill to be taken at night, or confection of senna, castor oil, seidlitz, or Püllna water, to be taken in the morning before breakfast. By good management the bad effects of both external and internal piles may be much relieved, or, as occasion

ally takes place, the disease may be permanently cured. When, however, the affection increases in extent and intensity, it will become necessary to undergo some surgical operation in order to obtain permanent relief.

The most successful treatment, judging from the certificates of cures which have been made, is by the introduction into the rectum of an ointment composed of some astringent and oil or grease—as, for instance, two drachms of powdered gall-nuts and an ounce of lard, or the extract of white oak bark and bacon, or powdered opium, resin, and tallow, each one ounce, or equal weights of glycerine and tannin. All of these ointments, it is claimed, have cured piles.

Dr. Harriman, of Indiana, it is reported, has been very successful in curing piles with an ointment made of the extract of white oak bark, half a pint, and oil of old and strong bacon, half a pint, simmered together until an union takes place when cold. Apply every night until well.

For use internally, take a teaspoonful to a dessertspoonful of sulphur in half a pint of milk every day. This, of itself, has been used with complete success by individuals who had spent scores of pounds in medical advice.

When the intestine falls down after evacuation, restore it by pressing gently with the finger, and use some astringent as a lotion to prevent its return.

Pillows.—Some writers on hygiene think horse-hair pillows much more conducive to health than feathers, especially for children, as they keep the head cooler.

Pills (*Lat.* *pila*, a ball).—The following will be found to be useful and reliable recipe for pills for general family use:—

1. *Aperient Pills, Mild.*—Take of compound extract of colocynth, half a drachm; compound rhubarb pill mass, a scruple; Castile soap, ten grains; oil of juniper, five drops. Beat them into a mass, and divide them into twelve pills. These are excellent aperient pills for occasional use in costive-

ness, bilious affections, and on all ordinary occasions. One pill taken at bed-time is generally sufficient, but some persons may require two.

2. *Purgative Pills.*—Take of compound extract of colocynth, compound rhubarb pill mass, of each, half a drachm; calomel, twelve grains; oil of caraway, five drops; syrup, a sufficient quantity to form the whole into a mass. Divide it into fifteen pills. These are purgative pills of great service in fevers, inflammation, and all cases in which such a purgative is required. Given in doses of two at bed-time, they are pretty certain of procuring free evacuations next day. One pill, or even half a one, generally operates as a very mild yet effectual aperient of much benefit in costiveness.

3. *Quinine Pills.*—Take of sulphate of quinine, twelve grains; conserve of roses, sufficient to make twelve pills. One to be taken three times a day, before food. Useful in cases of convalescence from fevers, inflammation, etc., when the appetite is capricious.

4. *Strengthening Pills, No. 1.*—Take of subcarbonate of iron, a drachm and a half; ipecacuanha in powder, fifteen grains; extract of gentian, half a drachm; socotrine aloes in powder, six or eight grains. Simple syrup, or mucilage of gum arabic, a sufficient quantity to form the whole into a mass of proper consistence. Divide it into thirty pills. Two or three to be taken three times a day. Useful as a tonic in indigestion, etc.

5. *Strengthening Pills, No. 2.*—Take of sulphate of iron, half a drachm; subcarbonate of potash, ten grains; myrrh, in powder, a drachm; compound powder of aloes, half a drachm; beat them together, and divide the mass into thirty pills. These pills are often of the greatest service in green sickness and retention or suppression of the menses, accompanied with a languid pulse; and also in indigestion, general debility, etc. Two may be taken three times a day.

6. *Tonic Pills.*—Take of dried sulphate of iron, eighteen grains; sulphate of quinine,

twelve grains; extract of gentian, thirty grains. Mix. One pill to be taken three times a day. This is an excellent tonic pill, and may be given in cases of general debility.

Pineapple.—This very palatable fruit is, with some, difficult of digestion, and must be partaken of with caution, especially in debilitating weather.

"Pins and Needles."—This is a name applied to that peculiar numbness and pricking of the arm, foot, or leg, which is so commonly felt after pressure, or a long-continued constrained attitude. It is caused by some interruption to the circulation, and is generally removed by rubbing or exercise. If it should continue, it may be the precursor of some more serious attack, and medical advice should be sought.

"Pins and Needles," Causes of.—It will not be uninteresting to notice the familiar phenomenon which succeeds pressure on the nerve-trunk of the arm or leg, and is popularly called "pins and needles," or "leg asleep." Its cause is thus described by a well-known physiologist: "By pressure for a certain length of time the sensibility of the nerve is greatly blunted. When this pressure is removed suddenly, the sensibility will *gradually* be revived; as each nerve-fibre, composing the trunk, returns to its *normal* condition of sensibility, a pricking sensation is felt, and the successive prickings from the successive awakenings of the numerous fibres cause the pins and needles."

Pins, Needles, Thorns, and Splinters.—Suppose a pin, a needle, a thorn, or any fine splinter, to have been thrust into a fleshy part; the pain will generally be much more severe than in an extensive flesh wound, or, as it is technically called, incised wound. First, examine accurately to ascertain whether any portion of the instrument be broken off and lodged

in the wound; and, if so, use the ordinary means of extracting it. A small thorn or splinter may frequently be brought to the surface and taken out by pressure on the soft surrounding parts, which may sometimes effectually be made by firmly pressing a key with its hole immediately over the wound. In other cases, a pair of forceps will enable you to withdraw the offending substance, and in others a trifling enlargement of the wound, by a lancet, will bring the thorn, or whatever else it may be, within view, so that it may be easily extracted. If a needle, or other pointed body, completely embedded in the flesh, can be grasped end-ways between the finger and thumb, the point may be made to penetrate the skin from within outwards, so as to be easily withdrawn. A fish-hook, buried in the flesh beyond its barb, must be withdrawn in the same manner, by carrying the point onwards, so as to penetrate the skin from within outwards. In cases of more difficulty leave the extraction to abler hands.

Pitch.—Ordinary musical tones, as notes on the piano and organ, vary from thirty-three vibrations to 3,960 vibrations—i.e., rapid motions backwards and forwards—in a second. Some pianos are made so as to give out notes with as many as 4,224 vibrations in a second. The piccolo, a kind of flute, emits a shrill note of 4,752 vibrations in a second. These are the ordinary tones used in music; but the human ear distinguishes as music a tone with as few vibrations as twenty and as many as 38,000 in a second. The higher notes, however, are more or less painful to the ear, since they set up such powerful vibrations in the air of the auditory canal.

The pitch of a sound produced from the vocal cords is according to (a) the thickness; (b) the tension; (c) the length of the vocal cords.

Plague (*Lat.* *plaga*; *Gr.* *plage*, a blow or stroke).—This is a form of low fever associated with swelling of the glands, carbuncles, and petechiæ, or hæmorrhage in

the substance of the skin. It has been known for many years under different names, as the Black Death, the Levant Plague, pestilential fever, and glandular pestilence.

Plague, Causes of.—Certain conditions have always been found to favour the development and spread of this disease. Residence upon marshy alluvial soils along the Mediterranean, or near certain rivers, as the Nile, Euphrates, and Danube; low, over-crowded, or badly ventilated dwellings; a warm, moist atmosphere; decomposing animal and vegetable matter; insufficient and unwholesome food; and physical and moral wretchedness. Those who have lived in an elevated situation have escaped the disease when it has appeared in the district. The plague, like typhus, has often followed in the wake of famine and other calamities. The influence of season on the plague seems to be very marked. Cold weather seems to put a stop to its progress. The terrible mortality that ensues from this pestilence renders it very important that quarantine should be strictly enforced, that the most stringent rules should be made and carried out for the protection of other countries from its introduction by shipping and other channels of intercourse.

Plague, Symptoms of.—This disease seems to vary in its character somewhat in each epidemic, and even in the same outbreak; but the older records are not so clear as to be thoroughly trustworthy, and the absence of it from England for so many years has prevented medical men in modern times from observing its course. Swelling of glands comes on in the groin, armpits, and neck. The carbuncles are generally on the upper and lower limbs, less frequently on the chest, back, or cheek. They may vary in number from one or two up to a dozen; they vary also in size, and in their tendency to become gangrenous. The petechiæ are small hæmorrhages into the skin, and may be found scattered all over the body. The fever symptoms are chiefly those of shivering, nausea, vomiting, lassitude,

headache, and giddiness; the countenance is heavy and stupid, and the eyes suffused and watery. There is then heat of the skin, great thirst, frequent vomiting, a coated tongue, fœtid breath, a weak pulse, and great prostration. In some there is excitement and delirium, in others heaviness and stupor. The bowels are generally relaxed, and the stools dark and offensive. The urine is passed in less quantity than usual, and may even be bloody. Bleeding may also occur from the mouth, stomach, bowels, and air passages. In some the intellect is clear to the end, and in other cases convulsions and coma may come on.

Plague, Treatment of.—Not much can be done when an outbreak occurs with respect to giving any medicine with a beneficial effect. But much may be done by avoiding any over-active measures, and allowing the patient a pure air and an equable temperature. Bleeding, active purgation, and the use of mercury must be carefully avoided. The diet must be light and nourishing, and the patient's strength supported as far as possible. The treatment, in fact, is the same as we have prescribed for typhus fever. The great object, however, should be to carry out such sanitary arrangements as may prevent, and to avoid those unhealthy districts which favour an outbreak. By these means it seems probable that the plague will never again visit our shores.

Plague, Dr. Gregory on the.—The symptoms of plague have been described by Dr. Gregory as follows:—

“A feeling of great languor and lassitude ushers in an attack of plague, which, for the most part, happens towards evening. There is always a cold stage, though it is seldom of long duration. Heat of skin, headache, and giddiness succeed. The pain of the head is referred to the temples and eyebrows; the eyes appear heavy, dull, and muddy. The expression of countenance changes in a remarkable manner. Sometimes there is a wild and furious look;

sometimes a look claiming commiseration, with a sunk eye and contracted feature. The most striking of all the early symptoms of plague is the staggering, and the sudden extreme prostration of strength. A strong tendency to void the urine is generally noticed. The stomach is very irritable, and rejects almost everything presented to it. The tongue is white and moist. The bowels are sometimes torpid, and at other times loose, the evacuations being always highly offensive. The speech falters. The pulse is at first small, hard, and quick; but after the appearance of buboes it often becomes fuller and softer. It is sometimes intermittent; in point of frequency its average may be stated at 100. The heat of the skin is seldom very intense. The head is occasionally perfectly clear and collected; at other times stupor occurs immediately after the formation of the hot fit. Some cases of the disease are ushered in by a violent fit of mania; the greatest indifference with regard to recovery prevails, and is always reckoned a most unfavourable symptom.

"After one, two, or, at furthest, three days, pains in the groin and armpit announce the formation of buboes. These pains are often highly acute, and unless speedily followed by the swelling of the gland, the patient dies delirious. In women the armpit, in men the groin, are chiefly affected. Carbuncles appear at the same time, but indifferently on all parts of the body. Petechiæ and vibices are much more frequent than carbuncles, which, it appears, do not occur above once in twenty cases. The fatal termination is sometimes preceded by violent hæmorrhages from the mouth, nose, or intestines.

"The duration of the disease is very various. A few cases are on record where the patient died within a few hours from the invasion. To many it proves fatal during the first paroxysm or period, which includes the time from the evening of the attack to the close of the following night. The third and fifth days are, however, upon the whole, those of the greatest danger. The former is the usual period of the appear-

ance of bubo; the latter of the abatement of the febrile symptoms. If the patient survives the fifth day, and the bubo is fully formed, he may be considered as nearly out of danger. The convalescence, indeed, is always very tedious, from the extreme debility which the disease leaves, and the patient's life is not unfrequently put into imminent hazard from the occurrence of gangrene in the extremities.

"In the malignant form of plague, every variety of treatment has been tried, but with so little effect, that it may be considered as a disease nearly beyond the reach of medicine. The violent headache which occurs during the first twenty-four hours seems to point out the propriety of blood-letting, and it is recommended by the general custom of Turkish practitioners; but, in the hands of English surgeons, it proved of no avail. In the cases in which it was tried, it did not appear, however, to make matters worse. Where mercury can be brought to affect the mouth, it appears to be of some service; but it is seldom that sufficient time is afforded for this specific effect of the remedy. Ether and laudanum are valuable medicines in allaying the irritability of the stomach. Wine and opium are of no use during the violence of the disease, and bark can seldom be retained. This is much to be regretted, for wherever it can be made to stay on the stomach, even in those severe cases where carbuncles and vibices appear, its good effects are conspicuous. Camphor, bark, and wine are given with much advantage during the period of convalescence. Emetics, purgatives, and the cold effusion have been tried, but it does not appear that they are of any service. Diaphoresis can seldom be produced, owing to the disposition to vomit; but wherever it can be produced, the symptoms seem to be unmitigated by it.

"The latest period of the contagion of plague, or that between communication with an affected individual and the appearance, is extremely short, and liable to little variation. It is scarcely ever less than three days, and it seldom exceeds six. Instances, indeed, are recorded of the disease not

appearing until the tenth day, but these cases are rare.

“The contagion spreads to a very small distance only from the body of the patient, the consequence of which is, that the disease is seldom, if ever, communicated, except by actual contact.

“The dead body does not communicate the disease so readily as the living. This appears to be well understood in Turkey; but that the contagion is sometimes received from the dead body cannot be doubted.

“The contagion of plague is readily imparted to families, in which it may lurk for a very long time, more particularly if excluded from the air.”

Plague, History of.—Before the end of the seventeenth century this disorder seems to have prevailed in many countries of Europe, and to have been endemic, occasionally breaking out over a wider area. In London, for the first seven years of the century, not a year passed by without a few deaths being recorded as due to this disease, while it appeared in an epidemic form in 1603, 1625, 1636, and 1665. The last epidemic was so terrible in its consequences as to be known as the Great Plague, but it was followed by a marked decline, and the deaths afterwards became fewer and fewer, and since 1679 none have been recorded in the metropolis. During the eighteenth century, although there was a marked diminution in the frequency and extent of the epidemic, yet there were several outbreaks in Europe. In the present century the disease has chiefly broken out in Egypt, Syria, Asia Minor, and the Coast of Barbary.

Plasma.—See BLOOD.

Plaster of Paris Bandage.—When a bandage of this kind is necessary, prepare for the surgeon strips of very thin soft muslin of the required width. The cloth sold under the name of “cheese wraps” is best, being an unbleached muslin with very wide meshes, and entirely without

sizing: sizing interferes with the setting of the plaster. Lay the near end of the strips in a flat tray, in which there is a pint or more of plaster of Paris, of the best quality and perfectly fresh; roll up the bandage in the plaster, rubbing the plaster in with a spoon as you draw the strip through it towards you; or have a second person put on the plaster with a dredging box as you roll the bandage, the point being to fill the whole length and breadth of the bandage with the plaster. When the surgeon is ready to apply it, dip the rolls for a moment in water, until they have taken up all that they will; then squeeze them slightly, and they are ready. Hot water will set the plaster more rapidly than cold, and hot salt water more rapidly than either.

Plaster of Paris Bandage, Another Way.—Mix plaster of Paris with water to the thickness of an ordinary poultice, and have ready folds of sheet-lint or old napkins, which will be dipped in the mixture and applied by the surgeon with a roller bandage.

Pleasures of Old Age.—To show how much pleasure may be in store for those who are advanced in years, the reader may be referred to the example of Cornaro, an Italian, who, by the simplest and strictest regimen, and an unexampled perseverance in his plan, happily attained to a great age, which richly rewarded him for his self-denial, and gave an instructive lesson to posterity. One cannot read the history of the life and abstinence of this veteran of eighty-three, and hear how he praises that serenity and contentment for which he was indebted to his mode of living, without participating in his happiness and his cheerful sensations.

Till the fortieth year of his age he had led a life of dissipation; had been always subject to colics, pains in his limbs, and a fever; and was so far reduced by the last that his physicians assured him he could not live above two months; that all medicines would be useless, and that the only

thing which could be recommended for him was a spare diet. Having followed this advice, he found after some days he was much better: and at the end of a few years his health was not only perfectly re-established, but he became sounder than he had ever been before.

He resolved, therefore, to restrain himself more and more, and to use nothing except what was absolutely necessary for his subsistence. For sixty whole years he took no more than twelve ounces of food, everything included, and thirteen ounces of drink, daily. He avoided, also, violent heat and cold as well as passion, and by this uniform regimen he kept not only his body, but also his mind, in such a happy state, that nothing was able to derange them.

When at a great age, he lost an important law-suit, and though this disappointment hurried two of his brothers to the grave, he remained perfectly sound and resigned. He was once thrown from a carriage, and trodden under the feet of the horses, so that an arm and one of his feet were dislocated: but he caused them to be reduced, and, without the use of any medicine, was soon restored to his former condition.

But what is most worthy of remark, and proves how dangerous the smallest deviation from long custom may be, is what follows. When he was eighty years of age his friends prevailed upon him, as his body now required more nourishment, to make a little addition to his food. Though well aware that with the general decay of strength the power of digestion decreases also, and that in old age one ought rather to lessen than increase the quantity of nourishment, he gave way to their request, and raised his food to fourteen and his drink to sixteen ounces. "Scarcely," says he, "had I continued this mode of living ten days, when I began, instead of being cheerful as before, to become uneasy and dejected, a burthen to myself and to others. On the twelfth day I was seized with a pain in my side, which lasted twenty-four hours; and this was followed by a fever, which continued with so much violence for thirty-five days, that my

life was despaired of. But, by the blessing of God and my former regimen, I recovered; and now, in my eighty-third year, I enjoy a happy state both of body and mind. I can mount my horse without assistance; I climb steep hills; and I have lately written a play, abounding in innocent wit and humour. When I return home from a private company, or the senate, I find eleven grandchildren, whose education, amusement, and songs are the delight of my old age. I often sing with them, for my voice is now clearer and stronger than it ever was in my youth; and I am a stranger to those peevish and morose humours which fall so often to the lot of old age." In this happy disposition he attained to his hundredth year; but his example has never been imitated.

Pleura (*Gr.* *pleura*, the side, or a rib).

—The name given to the thin membrane which covers or lines the inner surface of the thorax or chest, and which envelopes the internal organs contained in this portion of the body as in a closed sac. When this membrane becomes inflamed, the disease that is the exciting cause of the inflammation is called *pleurisy*. Each lung, as it has been said, is covered by this beautifully delicate membrane, and the sides of the chest are lined with it. In the movements of breathing, the lung does not, therefore, rub against the side of the chest, but the pleura covering the lung rubs against the pleura lining the chest. A small quantity of fluid is thrown out from the pleura, and lubricates the lung in its movements.

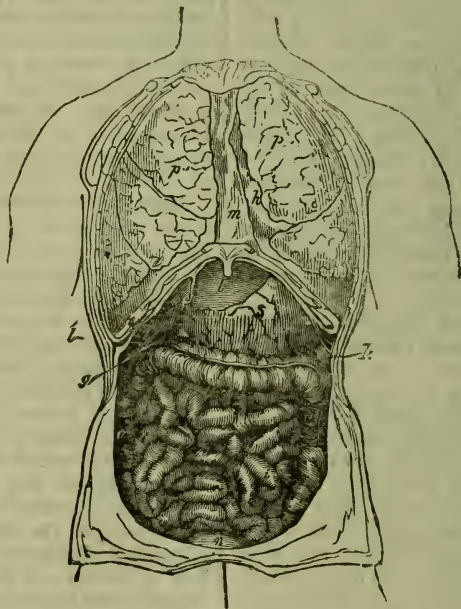
Pleurisy.—This is the name given to inflammation of the pleura, or serous membrane, which covers the lungs and lines the greater part of the cavity of the chest.

Pleurisy, Arrestment of.—"In nine cases out of ten," says an American physician, "it is believed pleurisy may be arrested if the patient at the beginning of an attack take an alcohol or vapour bath until perspiration freely issues, drinking freely of a strong tea made of pleurisy root

and catnip, and keeping well covered in bed. Turpentine may be applied over the seat of the pain, and mustard upon the feet; and rubbing the arms and legs with dry flannel tends to moderate the severity of the attack. Call in a doctor if relief is not obtained in a few hours."

Pleurisy, Causes of.—Exposure to wet and cold is the most common cause, but

hear a rubbing sound, due to the roughened surfaces moving on each other. There is also a feeling of weakness and lassitude, the pulse quickens, the tongue is coated white; there may be headache, thirst, and loss of appetite; the temperature is raised, and the usual febrile symptoms appear. In a day or two the breathing becomes worse, the sufferer keeps to his bed and lies on his back in a diagonal position, so as to enable



THE VISCERA OF THE THORAX AND ABDOMEN.

it may come on after an accident in which the ribs are broken, or cases of stabbing in the chest, or from a gunshot wound, or other internal injuries.

Pleurisy, Symptoms of.—The patient first complains of a severe catching pain in the affected side, and this is made worse on taking a deep inspiration, or coughing. The pain is usually confined to one spot, and on listening there, one may

the healthy lung to expand while the affected is too sore to rest on. These symptoms go on for several days without much change being observable, but they vary in intensity in different cases. At last comes the time when the fluid begins to be absorbed, and when the lung commences to expand again; but this takes up a very variable time, so that no rule can be laid down as to the duration of a pleurisy, some being of a very slight nature, while others may take weeks

and even months before they are really cured; but long before this the severe symptoms have abated, and the chief trouble is shortness of breath on any exertion being made. In most cases the patient is liable to pain in the chest afterwards, and to a recurrence of pleurisy on being over-heated, or on exposure to cold or wet.

The accompanying illustration affords a front view of the viscera of the thorax and abdomen: *p, p*, the lungs; *m*, the mediastinum; *h*, that portion of the heart which is not overlapped by the lung; *a, t, d*, the ascending, transverse, and descending portions of the colon; *i*, the various coils of the small intestine; *n*, the upper part of the bladder seen rising above the pubis; *l, v*, the liver; *s*, the stomach; *k*, the spleen; *g*, the lower portion of the gall-bladder projecting from under the liver.

Pleurisy, Treatment of.—The patient must, at once, be placed in bed in an atmosphere of about 60°–65° Fahr., and the air should be tolerably moist. This can be effected by boiling some water in a kettle on the fire, and letting the steam escape occasionally into the room. The main thing is to avoid any great variations of temperature, and especially of any chills to the surface of the body. Nor should the patient be moved about from one room to another if such movement cause any distress. Nor should he talk more than he can help. Three or four leeches applied to the spot where the pain is greatest will give much relief, and then when the bites have finished bleeding, a large hot linseed-meal poultice should be applied to the chest; but care must be taken that the bleeding does not re-commence on applying the heat, as too much blood may in that way be drawn, and tend to exhaust the patient, and make him feel faint. Cotton wool may also be applied for a similar purpose.

Light food must be given, and milk is generally borne the easiest in the early or febrile stage of the complaint; a light pudding, eggs, beef-tea, broth, jelly, and fish may be given when the appetite returns

and the tongue begins to clean. Restlessness at night is a common symptom, but this must be borne as well as possible, for any anodyne, as opium, etc., only tends to increase the difficulty of breathing, and adds to the distress.

During the recovery the patient should be careful not to go out too soon, and more especially if the weather is cold, foggy, or wet. He should sit up in the afternoon, and may go from one warm room to another, but should not exert himself too much if the breathing becomes hurried in doing so. Tonics may be given to improve the general health, and the patient may return to his ordinary diet. All cases should be careful for some weeks to avoid exposure to bad weather; should not go out after sunset; if possible, avoid getting overheated; and always wear flannel next the skin.

Plover.—The plover is a wild bird, of a milder flavour than most others, and of course more nourishing.

There are two kinds of plover that frequent parts of the United Kingdom—the grey plover and the green plover, which is called the lapwing, from its habit of dropping its wing when running from its nest in order to draw attention from its young; and the peewit, in verbal imitation of its cry. The eggs of the lapwing, which are collected and sold as a great delicacy in early spring, are most delicious when hard boiled. The yelk, or yolk, is mealy, so to speak, in its nature, and the albumen, or “white,” is of a bluish tinge and almost transparent.

Plums.—The varieties of this fruit are almost innumerable, and vary in their colour, form, size, and taste. The best are those that have a tender fine skin, and have a sweet agreeable taste. When perfectly ripe they are considerably nutritive; but they are liable to ferment in the stomach, in a still greater degree than the cherry. The dried fruit of that species, termed the French prune, is a little laxative, and of great service in costive habits, besides

affording a pleasant, nourishing food, the tendency of which to produce flatulence should be counteracted by not allowing them to mix with any other aliment, and therefore they should be taken on an empty stomach, or as the last meal. The larger sort of plums, as being seldom perfectly ripe, are more dangerous than the small ones. Plums dried in the oven are distinguished by the general name of prunes. When stewed with senna, prunes form a palatable and gentle laxative and aperient, well calculated for children and delicate females.

Pneumonia, Symptoms of (*Gr. pneumon, lung*).—This is an inflammation of the proper substance of the lungs. The disease generally announces itself with a chill or chilly feeling, which lasts from half an hour to an hour or two before a sensation of heat can be produced. The temperature will rise on the first day, and sometimes reaches 103°–105°. There is pain in the back and loins, and loss of appetite and flushed face. The first decided symptom of pneumonia will be shortness of breath, so that only short sentences are spoken without the need of breathing, and there is a “stitch” in the side. Do not postpone sending for a doctor, especially if the patient is old, feeble, or a child.

Pneumonia, Treatment of.—Keep the temperature of the room the same night and day, and at 65°–70°; do not let it become cool, and then try to remedy this by excessive heat, and equally do not let it be overheated and then cooled. Change the nightdress morning and evening, keeping two in use. Warm all the bed and body clothing when changed. Use warm water for bathing the patient, and keep him covered during the process, drying at once with warm, soft towels. Never turn back the bedclothes so as to expose the patient even for a moment. Keep him well supported by pillows under the shoulders: the breathing is easier for this support. Put an extra wrap about the shoulders: which are exposed by this upright position. Take

care that the feet and legs are warm, and guard in every way against draughts and check of perspiration.

Watch the expectoration; use a sputa cup, if possible, instead of cloths. An iron-rust colour is common, rather than clear streaks of blood in the mucus. Keep the expectoration for the doctor's inspection; absence of it at the commencement of the disease is unfavourable. Observe the breathing during sleep, and whether the patient feels pain when lying in one position rather than in another. Notice the character and quantity of the urine, and report all these things to the doctor. All the symptoms will increase in severity during the first week, and the critical day will, in ordinary cases, occur at its end. The amount of food taken will be very small, while the strength will be greatly reduced by the progress of the disease; it is therefore necessary to give the most nourishing articles in concentrated form—milk, with white of egg, custards, beef essence, strong chicken tea, etc. If lemonade is allowed, make it by using flax-seed tea thin, cooling it, and adding the lemons and sugar. Wine whey is suitable and nourishing as a drink. Ask the doctor for further directions as to feeding, and whether the drink shall be cold or warm. The patient should have a little food at short intervals. Not more than two hours should pass without it if there is much weakness. When solid food can be taken, let it be very tender mutton or beef. Sandwiches made very small and thin of raw beef scraped, and a saltspoonful of potted beef and ham added, will sometimes be taken, and with a glass of milk will make a nourishing meal.

Pocket Filter.—In foreign climes a pocket filter is useful for soldiers, or for those who are travelling in a country where fresh, pure water is not easily obtained. In hot countries it is often very rash for people to drink from the stream; a common plan for purifying the water is to have two barrels of different sizes, one within the other; the outer one is pierced with holes at the bot-

tom, and the inner one at the top; the space between is filled with charcoal and sand, through which the water percolates into the inner cask. Water should be boiled first, and then allowed to cool; or tea may be made, and the cold tea saved for the next day; this is a very refreshing drink. When the water supply is very short, advantage should be taken of every rainfall; salt or brackish water should be distilled, as is done at Iquique and other tropical places on the west coast of South America. In a running stream, men and cattle should be watered at different places, the former above the latter; all washing should be done lower down the stream, and the excreta must not be allowed to contaminate the drinking water.

Poisoning (*Fr.* *poison*; from *Lat.* *potio*, a draught).—With regard to cases of poisoning, it is desirable, first of all, to lay down certain rules which apply, more or less, to all cases, and which may be called into play by any one. Suppose an individual has swallowed poison accidentally or on purpose, and it becomes necessary to interfere for his safety, three things have to be done—1st, *to get rid of the poison*; 2nd, *to stop its effects*; and, 3rd, *to remove the evil it has done*.

One or other must come first, but it does not greatly matter which of the first two really be first attended to; the first always comes best. When the question arises whether we are to get rid of the poison before stopping its action, or after, one rule enforces itself: that is, to save time. “Whatever is readiest is best,” is emphatically the rule in dealing with poisoning. Better the poorest remedy given at the moment, than the very best given an hour later. There is this, however, to be said, as far as the public are concerned, that they always have the means of getting rid of the poison by them, but not always the means of stopping its action, or remedying its effects; so that, generally speaking, the former should be attempted in the absence of skilled aid.

A considerable number of all poisons are what might be termed self-evacuating; having been taken, they set up vomiting and purging, and are thereby eliminated. In such cases, all that is necessary to be done is to aid the self-evacuating process; especially to aid the vomiting, and so, perhaps, get rid of the poison altogether.

Ordinarily two kinds of means are employed to get rid of the poisonous substance in the stomach; these are the stomach pump and vomiting. It requires considerable skill to use the stomach pump, and usually when one is to be obtained, there is also to be obtained the skilled aid necessary for its employment. In passing the tube down into the stomach, the grand rule is to use as little force as possible, and to make the point of the tube slide along the posterior wall of the gullet. Occasionally, grievous accidents have arisen from unskilful use of this instrument, and so any one not acquainted with it, and attempting to use it, should attend implicitly to this rule. The great advantage of the stomach pump is that it allows you to wash the stomach out. With a properly constructed instrument it is possible to reverse the current, and so to effectually wash out the stomach. There are, however, certain cases—as where violent corrosives have been swallowed—where the tissues are so much softened that an attempt to pass the stomach pump would very likely end in driving it through the tissues, and so such attempts must be strictly avoided. The advantage of the stomach pump is that it requires no action on the part of the stomach to empty that organ. In cases where the stomach is paralyzed, as it sometimes is in opium poisoning, this is of very great importance.

In cases where, from whatever cause, the stomach pump cannot be employed, we have left to ourselves the self-evacuation known as vomiting. This, sometimes, is one of the results of the poison itself; in others it must be excited. If, as most irritants do, the poison has given rise to vomiting, it may only be necessary to encourage it. This is best done by tickling the fauces

with a feather, and by copious draughts of lukewarm water. This process, though exhausting, must be continued till everything seems expelled from the stomach.

Sometimes, however, there is no vomiting, and then something must be given to cause the stomach to get rid of its contents. Here the same rule that the readiest is best, prevails. It is useless, or worse than useless, to wait till an emetic is brought from the chemist's shop; if that be far away, the resources of the locality must suffice. Three things may be made use of as emetics, which are to be found almost everywhere. These are mustard, salt, and smelling salts, besides the stimulation of the fauces with the finger, and the use of lukewarm water, etc.

Smelling salts are not suitable for all cases, but are good in a certain number of cases of poisoning, especially by vegetable substances, which give rise to narcotic symptoms. The dose of this is half a teaspoonful given in a pint of lukewarm water, and followed up by copious draughts of the same. Mustard is a better emetic, and is generally to be had; its use is limited to those cases where there is no violent irritating effect produced by the poison, and the stomach requires a stimulant to call its action into full play. The dose of mustard is a tablespoonful, mixed up with a pint of lukewarm water, and followed up by copious draughts of the same. Salt can always be had, and a handful of this dissolved in water will usually suffice to produce copious vomiting, and so the evacuation of the stomach's contents. Ipecacuanha is a most useful emetic in cases where the stomach has been already irritated, and it is desirable to effectually get rid of any irritant substance which may remain. It is best given as ipecacuanha wine, half an ounce for a dose.

Poisoning, Lead. — See LEAD POISONING.

Poisoning, Mercurial.—See MERCURIAL POISONING.

Poisonous Clothing. — Clothing

that may be thus called, although less common than some sensational alarmists would represent, does come to market; and it is not so long since that a medical man reported a severe case of poisoning of a man's neck and face from a crimson neckerchief dyed with aniline. Gloves, stockings, drawers, etc., coloured with aniline, red, blue, or other tints, should be carefully avoided by children and ladies, and, indeed, men too, with sensitive skins.

Poisonous Fish. — That a certain number of fishes are poisonous is not to be denied; but the exact causes of their giving rise to symptoms of poisoning are by no means clear. In a certain number of instances, undoubtedly, the quantity has had more to do with giving rise to them than the quality. In yet other instances the use of putrid fish has induced symptoms of poisoning. Various tropical fish are poisonous at all times, but in this country shell-fish, which at one time are undoubtedly wholesome, at others have given rise to poisonous symptoms. Chief among these are mussels.

The causes of this poisonous character of fish are, it may be supposed, various. It may be due to the food they eat, to their not being properly cooked, or to some indefinable and mysterious peculiarity in the character of the fish that unfits it to become nutriment for a human being. One thing is certain, that it is usually impossible to distinguish poisonous fish either by their appearance or by their taste. There is much fear of oysters and mussels during the summer months, and yet only in exceptional cases do they harm any one at this season; but that the risk is greater in warm than in cold weather there is no doubt.

Poisonous Insects, Bites of.—Of the Invertebrata, the scorpion is perhaps the most formidable. Its sting is the claw with which it is armed at the end of its caudiform abdomen; this claw is perforated and connected at the base with poison-glands. The symptoms produced by its attack very

much resemble aggravated forms of wasp-stings. It is found in the hotter regions of the globe, and a small species in Southern Europe. The best remedy is the external application of ammonia, as well as its administration internally.

Centipedes (Scolopendræ).—The poison of these creatures is conveyed by some curved fangs connected with the mandibles, which are perforated, and probably communicate with poison-glands.

Spiders (Arachneidæ).—Of these there are a few species deserving of special notice. The tarantula (Southern Italy) has long enjoyed a reputation for the extraordinary effects said to be produced by its bite. Direct experiment, however, has shown that nothing beyond slight local irritation is produced; in fact, most of the tales connected with spiders' bites are fabrications. The bites of insects are comparatively innocuous; but it is otherwise with their stings. Stinging insects belong chiefly, if not exclusively, to the order *Hymenoptera*, in which the sting, in the sterile females, represents the modified ovipositor. The instrument consists essentially of two exceedingly fine sharp darts enclosed in a tubular sheath, at the base of which is placed a special venom gland or sac, whose contents are injected into the wound made by the serrated or barbed darts.

Poisonous Insects, Bites of, Treatment of.—Ammonia in the form of sal volatile is the best application for allaying the smarting and inflammation produced by the stings. If a person has been stung sufficiently to cause faintness, cordials and opiates must be administered without delay. The point of injury should be examined minutely, and the sting, which is frequently left in the wound, removed with a fine forceps. It sometimes happens that a wasp or bee may be swallowed in fruit or drink; the danger then is very urgent, from the rapidity with which the fauces swell up the moment the sting enters; leeches should be applied externally, and hot salt-and-water gargle used frequently. The

operation of laryngotomy, however, is usually the only available remedy.

Poisonous Wall Papers.—See WALL PAPERS, POISONOUS.

Poisons and Antidotes.—To impress this subject more strongly on the memory, the most ordinary poisons and their antidotes are here placed in a tabular form.

Poisons.	Antidotes.
Corrosive sublimate	White of eggs.
Verdigris	White of eggs.
Oxalic acid or	{ Magnesia or
Salt of lemons }	
	Chalk.
Sugar of lead }	{ Glauber's salts,
or Goulard }	
	or carbonate of potash, or carbonate of soda.
Barytes	{ Glauber's salts
	or Epsom salts.

If the antidote be not at hand, endeavour to excite vomiting immediately, but still procure and administer the antidote as speedily as possible.

Poison Valley of Java.—See CARBONIC ACID GAS, FATAL PROPERTIES OF.

Pomegranates.—These are of a cooling nature, particularly their red succulent pulp, and of a pleasant acidity, much like that of the lemon and orange; the sweetest kind of the fruit contains some nourishment, though but small. Both the flowers and bark of the fruit are strongly astringent: a decoction of them stops bleedings and purgings of all kinds. The pulp of the fruit, when in perfection, is very grateful, and has the same general qualities with the other acid fruits.

Ponds, Water from.—See MILL-DAMS, WATER FROM.

Poor Diet.—The term "poor" when applied to diet relates rather to the quality than the quantity of the food taken. Diet is poor when it consists of articles possessed of very little nutrient principle, and that

little of the lowest kind. It may more especially be regarded as poor, when these articles are out of condition, and of inferior or bad quality; as, for example, when watery, ill-prepared potatoes, damaged grain, or a large proportion of succulent autumnal vegetables are to a great degree relied upon as sustenance. Poor diet must be distinguished from simply low diet; although, like the latter, it powerfully tends to reduce and keep down the system: instead of being, like it, conducive to health, it is a fruitful and almost certain source of disease. The term "poor diet" is sometimes employed, by comparison, in those cases in which an individual, who has been accustomed to nutritious articles of food, is reduced to those which, without being unsound of their kind, are nevertheless possessed of very little nutritive power. It is often important to warn those whose health requires that they should be put upon low diet, against confounding it with the poor diet of which we have last spoken, as well as the danger of their oppressing their stomach in respect to quantity, whilst they scrupulously attend to the reduction in quality.

Poor, Houses of the.—See HOUSES OF THE POOR.

Popular Remedies for Ague.—See AGUE, POPULAR REMEDIES FOR.

Pores of Skin, Effect of Closing (*Lat. porus; Gr. poros, passage*).—When animals are completely covered with an impermeable coating, as by varnishing the surface, death always takes place; and the story is current among physiologists—though it has lately been denied by some—that a child who was covered with gold leaf in order to represent an angel in the ceremonies attending the coronation of Pope Leo X. died a few hours after the coating had been applied. The importance, then, of a proper care of the skin can hardly be over-estimated, that these many pores through which this vast amount of fluid

passes out of the system may not be clogged. Proper bathing and friction are all essential elements of a healthy skin, and a perfectly active skin means a great deal towards a perfectly active general system.

Pork (*Lat. porcus, a pig*).—The flesh of the sow is strong, and makes bad bacon. It is the flesh of the castrated animal that is in common use, and that is known by the name of *pork*. It is a very savoury food, and affords a strong nourishment, suited to persons who lead an active or laborious life, but is not easily digested, nor can it be considered wholesome. The too-frequent and long-continued use of this meat favours obesity, and produces foulness of the stomach and bowels. Pork contains five times as much of the food for heat as of the food for muscles and tissues, and is therefore the best for cold weather; while veal is better suited to warm weather. In lean beef-steaks, the muscle-making principle predominates, and consequently butter or potatoes, rice or Indian corn should accompany them, while with fat pork we require beans, peas, etc. Pork and beans contain the muscle and vital element as well as the heaters, and are exceedingly wholesome diet for those who are active and exposed to the cold, while they are stupefying to the sedentary, and tend to produce inflammatory diseases or congestion if eaten in hot weather, and occasionally disorders of the skin. The flesh of the *sucking pig* is reckoned a great delicacy, is very nourishing, and perhaps more wholesome than the full-grown animal; but it is not readily dissolved in the stomach. Bacon is a coarse, heavy, and very indigestible food, only fit to be eaten by robust and labouring people. Those who have an impure state of the fluids, wounds or ulcers, or a tendency to cutaneous eruptions, as well as those who are afflicted with indigestion, cough, or consumption, should refrain from the use of pork.

The flesh of the *wild hog* is dense, but sufficiently tender, very nourishing, and more savoury and digestible than that of

the domestic hog. It is in season in the month of October. The head is esteemed the finest part, and the flesh of the young animal is reckoned a great delicacy.

Portable Food (*Lat.* portabilis, that which can be carried; from *porto*, I carry).—According to Dr. Galton, “the kinds of food that are most portable in the ordinary sense of the term are:—Extract of meat (Liebig’s, Hassall’s, and others); pemmican; meat-biscuit; dried meat; dried fish; wheat flour; biscuit; cheese; sugar; preserved potatoes; and Cholet’s compressed vegetables. Salt meat is not to be depended upon, for it is liable to become hard and worthless by long keeping.” To these may be added Edwards’ Desiccated Soups, and other similar preparations, which are useful at home as well as for travellers.

Porter.—See BEER.

Position in Sleep.—See SLEEP, POSITION IN.

Position during Labour.—See LABOUR, PREPARATIONS FOR.

Potato (*Spanish*, patata).—The discovery of America would have been a blessing had it done no more for us than procure us the potato. This root is at once wholesome and nutritious; agreeable to almost every taste; highly prolific and easily cultivated; and an abundant crop may be procured from the land. In fact, it has been shown that a given number of acres will support a greater number of persons if used for the cultivation of potatoes than when devoted to any other kind of produce: hence their abundance and cheapness, which accommodate them to the poorer classes. Being almost entirely free from any peculiar flavour of their own, they seem suited to every palate; and amongst the various dislikes and antipathies which the different tastes of men present, we shall scarcely meet with an instance of the potato being found offensive. From the same cause it

may be eaten in conjunction with every other article of food, as well as by itself.

Potatoes contain much starch, which is made into sugar, spirits, gum, etc. Numerous varieties exist, but the average composition is as follows:—

	In 100 parts.	In 1 lb. oz. grs.
Water	75·0	12 0
Fibriu and albumen	2·3	0 161
Starch	15·2	2 210
Dextrine and pectose	2·2	0 139
Fat	0·3	0 22
Cellulose	1·0	0 70
Mineral matter	1·0	0 70

Notwithstanding the small quantity of flesh-formers, potatoes are known to be a most valuable article of diet. They should never be depended on alone, but, as an addition to a diet with fat or flesh-formers, they are invaluable. During the potato famine in Ireland no substitute was found equal to them, and scurvy was the frequent result of their absence from the diet of the poor.

Potatoes are cooked in various ways, but the best methods of cooking are those where the saline matters are prevented from being lost in the medium (as water) in which they are cooked. They may be eaten raw as a salad with vinegar, and this has been found especially valuable in cases of scurvy, where uncooked vegetable food has not been procured for a length of time. The starch is often separated from the potato, and used to adulterate corn-flour, arrowroot, and other amylaceous foods. The scrapings of a potato may be used as a cold cataplasm with advantage in small burns. In the rind or peel of potato tubers there is a poisonous substance called *solanine*. This is destroyed or dissipated when the potatoes are boiled or steamed.

One great advantage of the potato is the length of time during which it may, with little or no trouble, be preserved in excellent condition, which enables us to have it in season throughout the year.

The dry mealy sort of potatoes are the

most easy of digestion, and the simplest way of preparing them for the table is the best. Mashed potatoes are difficult of digestion.

"The dried potato," says Johnson, "is less nutritive, weight for weight, in the sense of supporting the strength and enabling a man to undergo fatigue, than any other extensively used vegetable food of which the composition is known, with the exception only of rice and of the plantain. It approaches nearest, indeed, to rice, though it is somewhat superior to that grain. Thus, the dry substance of these three forms of food consist of—

	Rice.	Potato.	Plantain.
Gluten . . .	7½	8	5¼
Starch, etc. . .	92½	92	94¾
	100	100	100

amount of necessary sustenance. And that this deformity is somewhat less conspicuous in the Irish potato-eater than in the plantain-loving Negro, or even the rice-devouring Chinaman and Hindoo, is probably to be ascribed to the somewhat larger proportion of the gluten ingredient which is present in the potato."

Pott's Fracture.—In the accompanying illustration is shown the treatment of what is known as Pott's fracture by means of Dupuytren's splint. In this fracture the fibula or outer bone of the leg is broken about three inches above the ankle, while the tip of the internal malleolus is also broken off. The tendency of the muscular action in this fracture is to draw the foot outwards and upwards, and to counteract this influence a splint is placed on the inner



POTT'S FRACTURE.

"There is, therefore, a remarkable similarity among these three kinds of food, in so far as they all differ from our cereal and other grains and roots, in containing a smaller proportion of the ingredient represented by the gluten of wheat. And in the use of them all, it is remarkable that a chemical or physiological likeness is indicated by the observation that the tribes of people who live exclusively or even chiefly on any of these three vegetable productions are distinguished by the size and prominence of their stomachs! The Hindoo who lives on rice, the negro who lives on the plantain, and the Irishman who lives exclusively on the potato are all described as being more or less pot-bellied. This peculiarity is to be ascribed in part, I suppose, to the necessity of eating a large bulk of food, in order to be able to extract from it a sufficient

side of the leg and well padded in the middle so as to permit of the pad acting as a fulcrum over which the foot can be drawn and its outward tendency to displacement counteracted.

Poultices.—A poultice, unlike a mustard-plaster, should be made larger than is absolutely necessary. It is intended to allay pain and inflammation, and as the pain probably extends beyond the inflamed part, a large poultice should be made to cover the surrounding surface. Spread it on a stout piece of cotton. Let it be from half an inch to an inch thick. Do not pat it down into a hard pudding. Make the edges as thick as the middle, or else they dry rapidly and are painful. Cover the surface of the poultice with a very thin gauze or muslin, or bit of mosquito-bar, or lace, so that it

shall not stick to the surface and can all be removed at one time. In applying to the chest, do not cover the nipples if it can be avoided. Have the cloth on which it is spread large enough to double up all round the four sides, over the edges of the poultice, that it may not ooze out. Have everything ready, and the patient's clothing unfastened, before you bring the poultice to the bed. Apply it immediately as warm as it can be borne. Cover it with oil-silk or rubber-sheeting, and then a flannel. Keep it firmly fastened to the place it is intended to cover, and renew it before it is cold. Its purpose is defeated if it becomes a stiff cold paste, or if it is allowed to slip about in an unsteady way. Linseed is better than anything else for an ordinary poultice.

When oil is needed to spread over the surface of the poultice, use vaseline: it does not become rancid. Never use milk in making poultices; it quickly becomes sour, and is of no value in itself.

A good and very simple poultice is simply a piece of soft, thick sheet-lint, doubled, squeezed out in hot water, and laid over the part, covered with a larger piece of rubber-sheeting, which is useful for such purposes, and is very thin.

Bread Poultice.—Put half a pint of boiling water over a sufficient quantity of bread-crumbs; stir until a soft mass is obtained; spread about half an inch thick over a large cloth, and apply. Half an ounce of laudanum can be poured over if the pain to be relieved is great. If laudanum is used, care must be taken that the skin is not broken.

Charcoal Poultice (No. 1).—For a charcoal poultice take two ounces of bread-crumbs and soak for ten minutes in ten ounces of boiling water, then mix, and add gradually half an ounce of powdered wood charcoal, and one and a half ounce of linseed meal. The whole should be well stirred together, and then spread and applied in the ordinary manner.

Charcoal Poultice (No. 2).—Another method adopted in making this poultice is to take half an ounce of wood charcoal, two

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ounces of linseed meal, and boiling water sufficient to make a poultice.

Chlorinated Soda Poultice.—A chlorinated soda poultice is made like a linseed meal poultice, but consists of two parts of linseed meal to one of chlorinated soda mixed with boiling water.

Hemlock Poultice.—Take two ounces of hemlock leaves in powder, six ounces of linseed meal and a pint of boiling water. Mix the linseed meal with the powdered hemlock, and add them gradually to the water, keeping up constant stirring while doing so. This poultice was more frequently used formerly than now, and was applied because of its sedative and soothing qualities to alleviate the pain of cancerous and other malignant sores. The best poultice is that which is made of fresh hemlock leaves bruised; the dried and powdered leaves are apt to be inert.

Irish Moss Poultice.—In Paris, carrageen, or Irish moss, has been used as a substitute for linseed meal and other kinds of poultices, with good results. It does not ferment, and remains moist and inodorous for sixteen or eighteen hours, when properly prepared by chopping and soaking.

Linseed Meal Poultices.—That which is of most frequent use is a poultice made of linseed meal. The meal should be got from those who can guarantee its being well prepared, as much that is sold in the shops is objectionable, from this quality being wanting; and, unless it is good, it may occasion considerable irritation of the skin, giving rise to redness and eruptions. Linseed meal derives its emollient properties from two principles which it contains—the one an oil, and the other a mucilaginous substance. By the presence of the latter the water is retained in the poultice; while, by the presence of the former, the entrance of air is prevented and heat retained. Besides this, the oil exercises a soothing influence upon the part to which it is applied. It is very common, in making a linseed meal poultice, to pour boiling water on the meal, and stir it up till it is of the proper consistence; but poultices so made

are seldom homogeneous, and, in consequence, do not retain either heat or moisture well. The poultice, to be properly made, should be boiled till it is of the consistence of a thick pap, when it will be found to retain heat and moisture longer, and answer the purposes for which it was intended better, than if this precaution is neglected. Instead of using water alone, milk and water may be employed, or decoctions of mallows, flax-seed, etc., by which the emollient properties of the linseed meal are increased. The emollient action of the poultice may be further increased by smearing the surface with olive oil or lard, which substances have the additional advantage of allowing the removal of the poultice with the greatest facility. Many people are in the habit of interposing a piece of cloth between the poultice and the part to which it is applied. As this is unnecessary, it had better be done without; or, if anything of the kind is made use of, let it be of the lightest possible material, such as a piece of gauze. In order to prevent evaporation and retain heat longer, a piece of oiled silk may be placed external to the poultice. Care should be taken in placing the poultice to see that there is no chance of its slipping and the surface being left bare. The means to be adopted for this purpose must, of necessity, vary according to the part of the body to which it is wished to apply the poultice.

Yeast Poultice (No. 1).—A yeast poultice is made by mixing a pound of flour or linseed meal with half a pint of yeast. The mixture is to be heated and carefully stirred.

Yeast Poultice (No. 2).—Take of beer yeast, ten ounces; flour, sixteen ounces. Mix and expose the mass to a gentle heat till it rises, when it is ready for use. The yeast poultice acts as a stimulant and antiseptic, and is employed with benefit in ill-conditioned or badly smelling sores; also in cases of mortification to destroy fœtor and assist in removing the dead tissues.

Besides the poultices mentioned above there are others in frequent use, such as those made from bread and water, oatmeal,

arrowroot, bran; and others, which are much less employed, made from carrots, potatoes, onions, sweet apples, etc. In addition to these there are poultices more strictly medicated, such as those made of foxglove or hemlock. As these last may prove dangerous if carelessly employed, they ought only to be made use of when ordered by the medical attendant.

Powders.—The following are recipes for a few powders that can be regarded as being useful and safe for family use:—

Aperient Powder.—Take of grey powder, two grains; bicarbonate of potash, fifteen grains; powdered rhubarb, ten grains. Mix. A good aperient powder in cases of biliousness when the tongue is coated with yellow brown fur.

Astringent Powder.—Take of compound powder of ipecacuan, three grains; compound powder of cinnamon, eight grains. Mix them. This is an astringent powder of great value in looseness and flux. It tends to relax the skin at the same time that it acts as an astringent upon the bowels, and is effectually employed to allay pain in such diseases. It may be repeated every three or four hours.

Powder to Allay Sickness Arising from Irritable Condition of Stomach.—Take of sub-nitrate of bismuth, ten grains; bicarbonate of soda, ten to fifteen grains. Mix. To be taken every three hours till the sickness is relieved.

Purgative Powder.—Take of calomel, two grains; jalap in powder, rhubarb root in powder, of each five grains. Mix. To be taken in any convenient vehicle.

Sweating Powder.—Take of compound powder of ipecacuan (Dover's Powder) twelve grains. To be taken at bed-time in a little gruel and a teacupful of warm gruel administered half an hour after. This is a good remedy in a case of ordinary head cold.

Worm Powder.—Take of santolin one half to three grains for a child according to age. To be given in the morning in a little milk on an empty stomach, and a dose of

castor oil administered three or four hours after.

The doses of the medicines contained in the preceding prescriptions are those proper for adults, unless when otherwise stated, and in proportioning the dose to the age of a child, it may be generally assumed that a patient of fourteen years of age will require about one-half the quantity proper for an adult; seven years old, one third; three years, one-sixth; one year, one-twelfth.

Power of Anxiety and Fear.—

See ANXIETY AND FEAR, POWER OF.

Power, Vital.—See VITAL POWER.

Practical Rules for Prevention of Contagion.—See CONTAGION, PRACTICAL RULES FOR PREVENTION OF.

Practice of Homœopathy.—At the introduction of homœopathy it was the general practice of medical men who favoured and adopted the new theory to give medicines in the doses usually employed; but it was found that these acted too powerfully, and thus did injury because patients who exhibited the morbid symptoms of the disease to counteract which the drugs were given, were all the more disposed to yield to the medicinal effects of the drugs themselves, which, as experience soon showed, were not required in such strong doses. Hence the quantities given were gradually reduced until a minimum was attained, which was possessed of power sufficient to counteract the morbid symptoms and effect a cure, without causing inconvenience, and often suffering, by excess of medicinal action. Thus it is that small doses have become the rule in homœopathic practice, not because large doses would fail to effect a cure, but because when it was discovered that small doses would do the work as well and even better, it was doing harm to the patient and really wasting power to persevere in a course which was found to be altogether unnecessary.

Practice of Homœopathy Supported.—Following the course that has been adopted in the consideration of the principle of homœopathy, let us now see what reasons can be adduced in favour of small doses *versus* large doses in addition to those which have just been given. It is a well-known fact that children have sometimes got hold of a bottle of homœopathic globules or pilules, and have swallowed the bottleful without inconvenience or any palpable effect; and because no harm has resulted from this wholesale consumption of medicine that is represented to be possessed of great power to cure certain ailments, it has been argued that because it has done no harm in the cases to which reference has been made, it is equally impossible for it to do any good. But homœopathic medicine, be it remembered, will only act homœopathically; that is to say, it will only produce the desired effect in persons who are suffering from any disorder, which may be counteracted by its use. The children in question were in no way predisposed by morbid symptoms to yield to the influence of the medicine, which, if taken even in single globules, was of sufficient strength to benefit any one who really needed it, but was not sufficiently strong, even collectively, to produce any effect on a healthy person, larger doses being required to produce medicinal effects than are required to counteract and cure morbid symptoms.

Precautions in Infectious Disorders.—See INFECTIOUS DISORDERS, PRECAUTIONS IN.

Precautions with New Houses.
—See NEW HOUSES, PRECAUTIONS WITH.

Precedence of Foods in Digestibility.—The following list of foods in order of precedence according to digestibility, has been arranged by Dr. Chambers:—

Sweetbread and lambs' trotters,
Boiled chicken,
Venison.

Lightly boiled eggs, new toasted cheese.
 Roasted fowl, turkey, partridge, pheasant.
 Lamb, wild duck.
 Oysters, periwinkle.
 Omelette (?), tripe (?).
 Boiled sole, haddock, skate, trout, perch.
 Mutton.
 Roast beef.
 Boiled beef.
 Rump steak.
 Roast veal.
 Boiled veal, rabbit.
 Salmon, mackerel, herring, pilchard, sprat.
 Hard boiled and fried eggs.
 Wood pigeon, hare.
 Tame pigeon, tame duck, goose.
 Fried fish.
 Roast and boiled pork.
 Heart, liver, lights, milt, and kidneys of ox, swine, and sheep.
 Lobsters, shrimps, prawns.
 Caviare.
 Smoked, dried, salted, and pickled, fish.
 Crab.
 Ripe old cheese.

Predisposition to Disease.—The following remarks on predisposition to disease have been made by a well-known medical authority:—

“What,” says this writer, “are predisposing causes of disease? In answer to this we may remark that some persons are more liable to be effected by the operation of many of these ascertained causes, *exciting* causes, than others are; and the same persons are more liable to be influenced at one time than another. And special circumstances, existing in particular cases, will be found to account for this variable operation of known exciting causes upon the bodily health. These special circumstances may properly be called predisposing causes. Thus, of twenty persons exposed to the same noxious influence—to the combined agency of wet and cold during shipwreck, for example—one shall have catarrh, another rheumatism, a third pleurisy, a fourth ophthalmia, a fifth inflammation of the bowels, and fifteen shall

escape without any illness at all. A man does that with impunity to-day which shall put his life in jeopardy when he repeats it next week. It is not, therefore, the exciting causes alone that in all cases determine the disease. Something—nay much, or all—will frequently depend on the condition of the body at the time when the exciting cause is applied; and this condition of the body, which we call predisposition, will depend on circumstances then or previously in operation; and these circumstances are, in our language, predisposing causes.

“We must take care not to confound, as many apparently do, the predisposition with the circumstance creating it. The predisposition is a certain state of the body—the predisposing cause is what produces that state. The cause of the predisposition is the predisposing cause of the disease. A predisposing cause may, therefore, be defined to be anything whatever, which has had such a previous influence on the body as to have rendered it universally susceptible to the exciting cause of the particular disease.

“It is sometimes difficult or impossible to say of a given cause whether it ought to be ranked among the exciting or among the predisposing causes; whether it has prepared the system for being affected by some other agent, or whether it has itself produced the disease; but, for the most part, the distinction is real, and sufficiently well marked, and of great importance to be attended to.

“Disease may sometimes be averted, even in spite of strong and fixed predisposition to it, if we know and can guard against the agencies by which it is capable of being excited. On the other hand, disease may often be warded off, notwithstanding the presence and application of its exciting cause, when its predisposing causes are ascertained, and can be prevented. In proportion as the body is weakened or exhausted, it yields more readily to the pernicious influence of contagion or of malaria, but by obviating all causes of debility and fortifying the system we walk with comparative security amid surrounding pestilence.”

Pregnancy (*Lat.* *prægnans*, with child; from *præig'no*, I bring forth).—There is no time when more care is necessary on the part of a woman than during the first few months of her married life. If strict attention has been paid prior to marriage to the carrying out of those hygienic rules so conducive to the maintenance of health, there is little fear that they will be neglected now. They should, however, be even more carefully attended to by the young wife, as their violation now brings with it more serious consequences than formerly it might have done.

It is necessary now to be watchful for those signs which indicate pregnancy. Information respecting these signs, as well as indications which mark advances in pregnancy, will be found in this volume under the following headings:—**ABDOMEN, CHANGES IN THE; BREASTS, CHANGES OCCURRING IN; LONGINGS; MENTAL PECULIARITIES; MORNING SICKNESS; QUICKENING; UNWELL, CEASING TO BE.**

Pregnancy, Diseases of.—*See* DISEASES OF PREGNANCY.

Pregnancy, Duration of.—When a woman becomes pregnant, she is naturally anxious to know when she may expect her confinement. The usual methods of calculation are based upon the average duration of human gestation, which is 280 days, or forty weeks. As, however, a woman may carry beyond the 280th day, or may be delivered short of it, any method of calculation is necessarily only to be regarded as approximate, it being perfectly impossible to fix the time of delivery to any one day. Frequently, also, a woman forgets the date of her last monthly illness; and in the case of those who become pregnant while nursing, and in whom menstruation has not yet returned, we are deprived of a very important factor in calculating the time when a confinement may be expected to take place. In such cases the calculation must be made from the time of quickening.

Many different methods of calculation are

in use among medical men, of which two only shall be mentioned here. The first is the one which goes by the name of Nægele's method, and consists in adding seven days to the commencement of the last menstrual period and counting back three months. Thus, supposing a woman ceased to menstruate on March 3rd, 1890, by adding 7 days and subtracting 3 months, or 90 days, we get the 10th December of the year 1890 as the probable day of confinement. The second method is that recommended by Dr. Matthews Duncan, and consists in ascertaining the day on which the female ceased to be poorly, or the first day of her being again well, and is described in his own words as follows:—"Taking that day nine months forward as 275, unless February is included, in which case it is taken as 273. To this add three days in the former case, or five, if February is in the count, to make up the 278. This 278th day should then be fixed as the middle of the week, or, to make the prediction more accurate, of the fortnight in which the confinement is likely to occur."

Pregnancy, Management of Health During.—*See* HEALTH, MANAGEMENT OF, DURING PREGNANCY.

Preparation of Homœopathic Medicines.—These are supplied in two forms, namely in globules or pilules and in tinctures, the latter form being considered preferable. Soluble drugs are prepared homœopathically by what is termed succussion or shaking; that is to say, a mode of treatment which effects the dispersion of a drug through liquid, generally alcohol, until the drug is equally diffused through the whole of the liquid; and insoluble drugs by trituration, or rubbing up in some vehicle, generally sugar of milk until the whole of the vehicle used is equally and thoroughly permeated by it. Thus it is that every individual globule or drop in medicine homœopathically prepared is of equal strength with its fellows. The potency of such minute subdivisions is ascribed to the extension of surface brought about by succussion or trituration, as the

case may be. It is argued that the active power of any drug is enormously increased by this so-called extension of surface, and as a grain of gold leaf one inch square may be hammered out into a thinner leaf ten inches square, its surface being thus increased a hundred-fold, so mercury which may be taken in large quantities almost with impunity, because in too great bulk to be active in proportion to its bulk, has its active properties marvellously increased by rubbing it up with some vehicle so as to procure its equal subdivision or, in other words, extension of surface. It is, then, from this extension of surface that homœopathic medicines derive their power and active properties. Evidence of this is obtained from the fact that the nutritive properties of the soil are brought into a better condition for their reception and assimilation, as plant food, by plants by the action of the frost—God's plough—which breaks up the clods into minute pieces, setting free its various constituents by subdivision of matter. Now what is this but increasing the active properties of the soil by extension of surface.

Preparations for Digestion.—

See DIGESTION, PREPARATIONS FOR.

Presbyopia (*Gr. pres'bŭs, old; ops, eye*).—Presbyopia, or old-sight, is the most common form of these; in fact, unless neutralized by short-sight, it is of physical necessity universal with all of us who live beyond middle age. People of fifty-five or upwards are frequently heard to boast that they can read perfectly well without glasses. Professor Donders says of them: "Such people consider themselves a lucky exception. They are extremely proud of their sharp sight. The inquiry as to whether they are near-sighted is answered in the negative, with a smile of self-complacency." But when their distant sight is compared with the natural standard, it is invariably found to be deficient. The degree of the defect may be slight, and they may be unaware of it, but it nevertheless exists. Old people

who have been using glasses for twenty or thirty years, are sometimes surprised by a return of the ability to read without them, and this is spoken of as "second sight"; they have become short-sighted in consequence of a change that has taken place in the shape of the lens.

Old-sight is simply a partial loss of the power to accommodate the eye to different distances.

The first symptoms of old-sight is a demand for brighter light and clearer print, and at length, somewhere between the ages of forty and fifty, dim light and poor print become so universal that we are forced to admit that our eyes are at fault, and to seek aid of the optician. The proper time to commence using glasses is when it is no longer possible to read with perfect comfort without them. A contest with age is hopeless, and it is the part of wisdom to yield gracefully to the first summons to surrender.

A convex glass is used to supplement the failing power to increase the convexity of the lens, and it is important that a proper glass should be selected. A common mistake of opticians is to commence with too strong a glass. People are apt to be pleased with such glasses, because by magnifying small print they make it unnaturally clear. It is by no means necessary, though, the glass that may seem most pleasant on first trial is the one that will give the most comfort on a long evening's work.

The same care should be exercised in increasing the power of the glasses as age advances; it should be done with reference, not to any stated intervals, but to the progressive failure of accommodation. It is well for persons who read or write a great deal by day and night to use the stronger glasses in artificial light only, and the old pair in the daytime.

Preservation of Health.—A knowledge of the principles which govern, and the course to be taken in order to preserve, health should—we have already insisted on it, but it cannot be too often repeated—be

possessed by all, and should occupy a prominent place in the education of the young. They, as well as old people, should know that the worst diseases which torment life, and frequently cause death, may be prevented by themselves. Children in the full glow of health think of illness, if they think of it at all, as a something, no doubt, very disagreeable to have, but about which they need not trouble themselves until it comes to trouble them. Having full confidence in their parents and the family medicine-chest, with the doctor ready to aid in any emergency, future disease has little terror for the youthful imagination. With the indifference to all forebodings of ill habitual to youth with its absorbing interest in present enjoyment, children are ordinarily reckless of any effect which their own conduct may have upon their health. They can, however, and ought to be made to, understand that it depends greatly upon themselves whether they are to be strong and healthy, or weak and miserable, or, in fact, to live or die. The preservation of their health should be inculcated upon them as a moral duty; for their usefulness in the world, and, therefore, the fulfilment of the great purpose of their creation, will depend upon it.

Preservation of Health a Duty.

—"I think," says Professor Fleeming Jenkin, in a lecture delivered in Edinburgh, "that it is our duty to take care of our bodies. We can neither work nor study to right advantage if our body is out of order; and when I come to our moral nature, I find something more to say. I wish to point out to you, that if our health is not good, we are liable to special temptations in consequence of the imperfection of that health. When we are ill, we are especially liable to be out of temper. We are especially liable to seek for some relief by means which are not the best; sometimes by drink, sometimes by other forms of indulgence of which we can hardly approve. What is after all our highest duty, or, may I say, our complete duty? Our complete duty is certainly

to love our neighbour and to love God. Now, I think that in certain states of health it is very difficult indeed to love our neighbour. If we are thoroughly out of temper, that feeling of kindness becomes almost impossible. And so with the second duty. Just let us ask ourselves for a moment what we mean when we say that we should love God. I don't wish to preach, but surely one can hardly love God without feeling a certain satisfaction, a certain contentment, in the world, and a recognition of the beauty that is all around us. Is it possible for us when out of health to have that feeling? I do not say that it is impossible for a sick person to love God; it certainly is not impossible, but I venture to say that if you are out of health, you are under much greater temptation than when you are in health; that you will then find it much more difficult to fulfil those two great duties, which sum up all others, than when you are in good health, and therefore it is your duty to avoid running into temptation; if you wilfully sacrifice your health, you do run into temptation."

Preserved Fruits, Acids of.—

See ACIDS OF PRESERVED FRUITS.

Preserved Meats.—The question has arisen whether the meat preserved in tins retains its digestive and nutritive qualities, so as to render it a fit substitute for fresh meat. There is no doubt that the "tinned" meat, from its exposure to a high temperature, possesses qualities different from those of meat cooked at a lower temperature; but this has nothing to do with its digestible power or its nourishing properties. It does not appear from any chemical analysis or experiments on its use, that the tinned differs at all from fresh meat. In prisons in England, where it has been tried on a large scale, no difference has been found in the health of prisoners after having taken it for months. In workhouses where it has been tried, old people prefer it to the inferior fresh meat often served up to them. The same reports come from

lunatic asylums, ships, and institutions where it is employed. Every now and then a case is found in which the exclusion of air or germs has not been perfectly effected, and in which decomposition has set in, but under no other circumstances has any objection to its use been substantiated.

Tinned meat requires little or no cooking. It may be taken cold with hot potatoes, or any other form of vegetable food. It may be heated and served up as a stew, but the ingenuity of an ordinary cook will suggest a hundred ways in which it may be placed upon the table.

The price of this meat will be seen to be much less than fresh meat, when it is considered that it contains no bones and no water. It is calculated that one pound of this meat in the dieting a family will go as far as two pounds of fresh meat.

A caution about tinned meats is necessary. "Sometimes—though rarely—they have been found to contain a little lead in solution in the gravy; sometimes a large number of small globules of soft solder, containing much lead, at the bottom of the tin. This caution applies to all tinned provisions, vegetable as well as animal. They should be carefully examined for metallic globules, which may prove injurious if swallowed with the food."

Preserved Milk.—See CONDENSED MILK.

Preserving Fish.—See FISH, DRIED AND SALTED.

Preventing Disease, Hippocrates' Mode of.—See DISEASE, HIPPOCRATES' MODE OF PREVENTING.

Prevention of Contagion, Practical Rules for.—See CONTAGION, PRACTICAL RULES FOR PREVENTION OF.

Prickly Heat.—This disorder, also called "milliaria," is an acute affection of the sweat-glands of an inflammatory nature. It shows itself in numerous minute red

points, slightly raised above the surface of the surrounding skin (papules), and in equally minute water-blisters (vesicles), which rise from a reddened, inflammatory base. These two forms may exist separately, or, as is more commonly the case, they co-exist. The disorder is not attended with marked constitutional symptoms other than the annoyance arising from the tingling and prickling which accompany the eruption. The points are separate, but they may be very close together, and usually recur in patches of greater or less extent. Its commonest seat is in the trunk and neck; but it not unfrequently appears on the face, and upper and lower extremities. In the natural creases of the skin it often becomes aggravated, and gives rise to distressing raw surfaces. Its duration may be brief, or crop after crop may appear, and the trouble be thus prolonged during the continuance of hot weather. It occurs at all periods of life, but is most common in infancy and old age. Professor Duhring has observed that the papular form is more apt to show itself in the healthy and well nourished; the vesicular in those who are feeble or in poor health. The outbreak is sudden, without premonitory symptoms, and it frequently disappears and breaks out again abruptly, without discoverable cause.

It is a disease of hot weather, and is produced by heat. Young persons, fleshy persons, and those who take much exercise and perspire excessively, are most liable to it. Flannels and other irritating underwear and superfluous clothing in general, produce it when the external temperature is high.

The disorder varies greatly in intensity. In tropical climates it is of greater importance than here, where it is usually an insignificant malady, tending to speedy spontaneous cure upon the removal of the exciting cause—heat. The treatment is a very simple one. Irritating and stimulating applications of every kind are to be carefully avoided; they tend to aggravate the symptoms, and to prolong their duration. Measures to diminish and control perspiration are to be taken; with diminished ac-

tivity of the sweat glands, the symptoms tend to disappear with more or less promptness. In ordinary cases, light clothing, rest, a cool apartment, the occasional partial or complete exposure of the affected surface to the air, simple diet, limited quantities of fluid, and a simple purgative, as a rule, work a speedy relief. Cool sponging is to be resorted to, and the surface should be dried without friction with the towel. Lycopodium, or starch powder, or oxide of zinc, mixed with these, may be lightly dusted over the surface. Internal remedies of a cooling or astringent character are sometimes needed. Where debility is present, or the ill-health of the patient has an influence in prolonging the disorder, measures designed to improve the constitutional condition are called for. There need be no fear of evil results from "driving in" the eruption. As long as hot weather continues, relapses are liable to occur.

Principle of Homœopathy.—It is possible that some persons may entertain an idea that the medicines given by the homœopathist would produce in a healthy person precisely the same diseases as those which they are given to counteract in any one suffering from disease. This is altogether erroneous, for the symptoms produced by any particular drug or medicine in a healthy person are only *similar* or *like* those resulting from the disease itself, and not in any way the same as the symptoms excited by the disease or *identical* with them. It must be noted that the great principle of homœopathy is that *Likes cure likes*, not that *Identicals cure identicals*, and this must never be lost sight of. "Homœopathy," to quote the words of Dr. Richard Epps, "is the practical application of the law, *Likes are cured by likes*, to the cure of disease. This law as an axiom would read, *It is impossible for two similar diseases to exist in the same individual and at the same time.*" The morbid matter, state or condition, call it which you will, which has caused the disease, or generated the sickly state into which the patient has lapsed, is

counteracted and neutralized by the action of the drug which, in a healthy person, would produce symptoms similar to, but not identical with, those which are excited by the disease.

Principle Supported.—The principle of homœopathy having been enunciated, it is now desirable to see if any results of general experience can be cited in its support. In the case, for example, of a severe burn, is it the custom to apply cooling lotions or any substance that happens to be a good conductor of heat to the part affected? Certainly not, must be the reply; for although cooling applications of any kind may be soothing for a time and a source of comfort to the sufferer, it is well known that they tend to increase inflammation in the long run and to render the pain of the burn more acutely felt. Then the theory that, "*Opposites are cured by opposites*" does not hold good in this case. No; but the contrary theory that "*Likes are cured by likes*" does most assuredly, for such burns are most quickly cured by the application of oil of turpentine or heated spirits of wine, both of which, when applied to the skin, cause a burning or tingling sensation and by wrapping the part affected with wadding or cotton wool which is a good non-conductor of heat, and maintains warmth in the part burnt, preventing the atmospheric air from obtaining free access to it. Again, in cases of frost bite the best thing to be done is to rub the part that is frostbitten with snow which is frozen water, and not to hold it to the fire or bathe it with warm water, which would spoil any chance that might otherwise exist of restoring the injured part to its former condition. Now what are these but direct evidence in favour of the homœopathic theory "*Likes are cured by likes*," and in opposition of the allopathic theory that "*Opposites are cured by opposites.*"

Principles Relating to Dislocations.—See DISLOCATIONS, PRINCIPLES RELATING TO,

Prismatic Glasses.— See SPECTACLES.

Prison Dietaries.— See PUBLIC DIETARIES.

Procuring Sleep, Franklin's Mode of.—"When you are awakened by uneasiness, and find you cannot easily sleep again, get out of bed, beat up and turn your pillow, shake the bedclothes well with at least twenty shakes; then throw the bed open and leave it to cool, in the meanwhile continuing undressed; walk about your chamber till your skin has had time to discharge its load, which it will do sooner as the air may be drier and colder. When you begin to feel the cold air unpleasant, then return to your bed, and you will soon fall asleep, and your sleep will be sweet and pleasant. All the scenes presented by your fancy will be of a pleasing kind. I am often as agreeably entertained with them as by the scenery of an opera. If you happen to be too indolent to get out of bed, you may, instead of it, lift up your bedclothes, so as to draw in a good deal of fresh air, and, by letting them fall, *force it out* again. This, repeated twenty times, will so clear them of the perspirable matter they have imbibed as to permit your sleeping well afterwards. But the latter method is not equal to the former.

"Those who do not love trouble, and can afford to have two beds, will find great luxury in rising when they wake in a hot bed, and going into a cool one. Such shifting of beds would be of great service to persons ill in fever, as it refreshes and frequently procures sleep. A very large bed, that will admit a removal so distant from the first situation as to be cool and sweet, may, in a degree, answer the same end.

"These are the rules of the art; and observing them, and maintaining a conscience void of offence, one may realize 'that to be able to lie down at nights and fall asleep within ten minutes, and to know no dream or waking until morning comes, and then to bound out of bed full of health, freshness

and good humour, is a blessing well worthy the warmest outgoings of a thankful heart towards Him who giveth us all things richly to enjoy.'"

Procuring Sleep, Gardner's Mode of.—A curious plan of procuring sleep was announced some years ago as a great discovery by a Mr. Gardner, and testimonials to its efficacy were given by many men of eminence. This plan, which was published by Mr. Binus, in his "*Anatomy of Sleep*," was as follows: The person who, after going to bed, finds himself wakeful, is to lie on his right side, with his head comfortably placed on the pillow, having the neck straight, so that respiration may be unimpeded. Let him then close his lips slightly, and take a rather full inspiration, breathing through the nostrils, unless breathing through the mouth is habitual. Having taken the full inspiration, the lungs are to be left to their own action; that is, expiration is not to be interfered with. Attention must now be fixed upon the respiration. The person must imagine that he *sees* the breath passing from his nostrils in a continuous stream, and at the instant that he brings his mind to conceive this apart from all other ideas, consciousness leaves him, and he falls asleep. Sometimes it happens that the method does not at once succeed. It should then be persevered in. Let the person take thirty or forty full inspirations, and proceed as before; but he must by no means attempt to count the respiratory acts, for if he does, the mere counting will keep him awake. The plan is at all events safe, and can easily be tested.

Procuring Sleep, Southey's Mode of.—"I put my arms out of bed," says Southey, in "*The Doctor*," "I turned the pillow for the sake of applying a cold surface to my cheek. I stretched my feet into the cold corner; I listened to the river and to the ticking of my watch; I thought of all sleepy sounds, and of all soporific things—the flow of water, the humming of bees, the motion of a boat, the waving of a field

of corn, the nodding of a mandarin's head on the chimney-piece, a horse in a mill, the opera, Mr. Humdrum's 'Conversations,' Mr. Proser's 'Poems,' Mr. Laxative's 'Speeches,' Mr. Lengthy's 'Sermons.' I tried the device of my own childhood, and fancied that the bed rushed with me round and round. At length Morpheus reminded me of Dr. Torpedo's 'Divinity Lectures,' where the voice, the manner, the matter, even the very atmosphere and the stream of candlelight were alike somnific; where he, who by strong effort lifted up his head and forced open the reluctant eyes, never failed to see all around him asleep. Lettuces, cowslip wine, poppy syrup, mandragora, hop pillows, spider's web pills, and the whole tribe of narcotics up to the bang and the black drop would have failed; but this was irresistible, and thus twenty years after date I found benefit from having attended the course."

Profit of Ventilation.—See VENTILATION, PROFIT OF.

Propagation of Contagious Diseases.—See CONTAGIOUS DISEASES, PROPAGATION OF.

Proper Temperature (*Lat. tempero*, I mix in due proportion).—The uniformity of temperature in the human body is sustained entirely by the vital powers, and the process appears to be carried on with the least expenditure of force when the atmospheric air indicates sixty degrees. Every material deviation from this point, whether by increase or diminution of temperature, if long continued, draws equally upon the constitution, and produces relaxation proportionate to the extent and duration of the cause, so that, in this sense, both heat and cold are directly debilitating powers to the human constitution. These facts prove that neither the cold nor the warm bath should be resorted to by those who are in ill health, without the advice of some considerate and able professional man.

Proper Time for Sleep.—See SLEEP, PROPER TIME FOR.

Proud Flesh.—Patients will frequently come to medical men to know if there is any proud flesh in their wounds. The fear of proud flesh is very general, but there is really nothing to be afraid of. When a wound is attended with loss of substance, it is gradually filled up by the growth of a cicatrix from the surrounding skin—and by a process which is called granulation, from the grain-like surface it presents. The granulations sometimes rise above the level of the surface; and no doubt the term "proud flesh" was given to this appearance as a figurative term for a luxuriant or forward growth. There is nothing either bad or malignant, as it is called, in the elevation, but it is rather indicative of a complete and rapid repair. There are, it is true, complaints which are attended with what are named malignant fungous growths; but they are happily very rare, and quite unconnected with the healing of common sores.

Proverbs of Health.—See HEALTH, PROVERBS AND APHORISMS OF.

Prudent Counsel Respecting Diet.—See DIET, PRUDENT COUNSEL RESPECTING.

Prudent Use of Intellectual Power.—See INTELLECTUAL POWER, PRUDENT USE OF.

Pruritus (*Lat. pruritus*, itching).—Pruritus, in accordance with its actual meaning, is used in connection with many diseases in which this is a feature. Thus, eczema is attended with great pruritus, or itching, as are also certain other eruptions. But in the present sense it is spoken of as a disease, for in many instances we have pruritus without any outward lesions or eruptions on the skin, except those caused by scratching.

Itching may be confined to certain parts of the body, and become distressing beyond measure, and sometimes resist the most patient and thorough attempts at its re-

moval. In the main, however, itching is only a symptom, and the cause should be investigated with great care; for otherwise all treatment is very unsatisfactory. Thus, occasionally, a case of scabies, or the itch, will remain long unrecognised; and many futile attempts will be made to relieve the itching, which will be absolutely impossible until the parasite is reached and destroyed.

Pruritus, Treatment of.—In regard to the treatment of pruritus, or itching, considerable care should be taken in the way of home management. In the first place, giving way to scratching provokes more itching, and really increases the difficulty; in the case of eczema it certainly prolongs the disease. Next, all irritating elements should be removed from itchy skin; thus, wool is irritating, and cannot be worn next the skin when thus affected. Again, much bathing, and especially friction after it, may greatly aggravate the trouble.

In employing the local applications which may be suitable to the case, one may fail of relief from their imperfect use. If ointments are used, the under-clothing will often absorb a large portion of it; and if this is changed daily, or very frequently, the fresh garment removes it again and again. Whereas, if the material next the skin is allowed to become somewhat soaked with the medicament, it will not take up so much again, and consequently more will soak into the skin.

In using lotions, they should as a rule be allowed to dry into the skin before wiping off. To accomplish this over much of the body, care must be exercised not to catch cold; for many of the evils which are charged to an eruption being driven in, are simply the results of a cold, contracted, possibly, while attending to local treatment.

From what has been said of the causation of itching, it will be readily seen that no general directions can be given to the lay reader for its treatment. In no branch of medicine is an accurate diagnosis so requisite for successful treatment as in skin diseases. Popular remedies for itching, such as weak

carbolic acid lotions, a few grains to the ounce, diluted vinegar or alcohol, bicarbonate of soda solution, a teaspoonful or so to the pint, and the like, are all of more or less service.

Pruritus in Pregnancy.—Along with the leucorrhœal discharge there sometimes exists a very painful and distressing condition or irritation of the external parts, to which the name of "pruritus" has been given. This irritation may, however, come on independently of any discharge, and by the itching to which it gives rise is a source of great annoyance to the patient. It sometimes appears to be neuralgic in its origin, while at other times it may be traced to the presence of small thread-worms in the lower bowel. If due to the latter cause, suitable means must be employed for their removal, such as enemata of salt and water every morning. Frequently, however, there is no cause that can be discovered to account for the itching.

Pruritus in Pregnancy, Treatment of.—This consists in the maintenance of strict cleanliness and the application of such lotions as Goulard's extract largely diluted with water. Should this not answer, a lotion composed of powdered borax and water, in the proportion of two drachms of the former to ten ounces of the latter, should be employed. When the irritation is great, and the patient unable to obtain sleep in consequence, bromide of potassium, given in twenty or thirty-grain doses at bedtime, will frequently lessen the irritability, and soothe the patient to sleep. The diet must be light and nutritious. Stimulants must be avoided, and the bowels regulated by the administration of mild laxatives when necessary.

Psoriasis (*Lat. pso'ra, itch*).—Psoriasis, or dry tetter, is a very common skin disease, which comes far behind eczema and acne in frequency, forming only about one-fifteenth of the whole number of skin diseases. Psoriasis may affect persons of all ages, but is

very uncommon in young children, and seldom develops for the first time in persons over forty years of age. It is characterized by the presence of separate spots or patches of diseased skin, which are of a dull red colour, and have on their surface (unless it has been removed) an abundance of white scales, which fall readily.

Psoriasis has a very decided preference for the outer or extensor surfaces of the joints, as on the elbows and the fronts of the leg and elbow; while eczema affects more commonly the inner, or flexor surfaces, as the bends of the elbows and knees. It not unfrequently attacks the scalp, and then gives rise to much scaling, and is one of the causes of dandruff, or dandriff. The surfaces of psoriasis are never moist, except when greatly scratched or irritated; while eczema tends to show moist surfaces. Psoriasis rarely itches, whereas eczema seldom fails in this.

The cause of psoriasis varies, and no short statement could be made popularly which would aid any one in avoiding it. It is not contagious; it is *not* caused by a parasite; it is only to a very slight degree hereditary.

Ptarmigan.—The ptarmigan, or white grouse, is nearly the same size as the red grouse. It is fond of lofty situations, where it braves the severest weather, and is found in most parts of Europe as well as in Greenland. In winter it flies in flocks and feeds on the wild vegetation of the hills, which imparts to its flesh a bitter but not altogether unpalatable taste. It has a rank flavour which is something like that of the hare.

Ptyaline.—See DIGESTION, PREPARATIONS FOR.

Public Dietaries.—The construction of public dietaries is a matter of great importance, and is constantly the source of disease or health on a large scale, according to the knowledge displayed in the combination of the right kinds of food. In the construction of public dietaries it should always be recollected that there are three forms of

food that should be represented at every meal. These are:—1. Flesh-forming materials, which consist of the nitrogenous substances known as albumen, fibrine, and casein. 2. Heat or force-giving substances, such as starch, sugar, and fats and oils of all kinds. It should be recollected that carbon is the principal substance that acts on the system in this group of food. 3. Mineral substances; these are the saline matters found in all kinds of organic bodies, and are as much required for the nutrition of the body as the flesh-formers, which occupy more bulk.

The following are examples of public dietaries for different classes of persons, in which the quantity of flesh-forming matters is calculated from the known quantities of these substances contained in the different articles of food supplied. The carbon, which represents the force or heat-giving material of the food, is calculated in the same way. 1. *The English soldier*: The average result of the diet tables issued for the army in this country and in India gives daily 5 ounces of flesh-formers and 10 ounces of carbon. 2. *The English sailor*, from tables drawn up for the navy, has 6 ounces of flesh-formers and 12 ounces of carbon. The quantity here is probably larger than in other classes, as the food, consisting largely of salt beef and hard biscuits, is less digestible than the food of the other classes. 3. *The Dutch soldier* in war gets 5 ounces of flesh-formers and 10½ ounces of carbon, but during peace he has 3½ ounces of flesh-formers and 10 of carbon. 4. *The French soldier* consumes 3½ ounces of flesh-formers and 12 ounces of carbon. 5. *Greenwich pensioners* had 4½ ounces of flesh-formers and 10 ounces of carbon. 6. *Old men* in Gillespie's Hospital, Edinburgh, take 3 ounces of flesh-formers and 10 ounces of carbon. 7. *Boys* at the Royal Naval School at Greenwich, 2½ ounces of flesh-formers, and 7½ ounces of carbon. 8. *Boys* at Christ's Hospital, 2½ ounces of flesh-formers, and 7 ounces of carbon. 9. *Pauper dietaries*.—The average of all the workhouses in the kingdom gives 3½ ounces of flesh-formers and 8½ of

carbon. 10. *Prison dietaries*.—The average of a number of these gives 4 ounces of flesh-formers and 10 ounces of carbon for their first-class diet; the second, third, and fourth class diets are much lower. In the Irish prisons the short-term dietaries are not more than $2\frac{1}{2}$ ounces of flesh-formers, and 5 ounces of carbon. 11. The average dietary of English families, including children, is found to be 4 ounces of flesh-formers and 11 ounces of carbon. The different kinds of food taken in a day to give this result are as follows: Fibrine, 3 ounces, albumen, 300 grains; casein in cheese, 137 grains; making altogether 4 ounces. The carbon in these would be about $1\frac{1}{2}$ ounce, while the rest of the carbon would be found in starch, 12 ounces, fat and butter, 5 ounces, sugar, 2 ounces. These things, with about one ounce of mineral matter, including salt, are dissolved in from seventy to ninety ounces of water, and taken daily.

In the preparation of public dietaries, not only should the quantity of the principal constituents be regarded, but the quality and properties of the food. In the first place, *variety* is of importance. The same amount of the primary constituents will go much further, when varied from day to day, than when the same things are given every day. Salt meat is not so healthful as fresh meat. Preserved, as that brought from Australia, will not agree so well every day as when alternated with fresh meat. A variety of vegetables, and, if possible, of bread and biscuits, should be secured. Fat in butter or lard should be given in at least the proportion of from two to five ounces a day. Saline substances are also necessary in food. These may be omitted in cooking. Salt should be always served free. The water in which vegetables and meat are boiled contains the mineral substances, and may be employed in making soup. Uncooked vegetables, as salads and fruit, supply also mineral substances. Food should be also served with condiments; they exercise a digesting influence on the stomach. In the same manner, alcohol acts as a stimulant in old and delicate persons. Sick dietaries

must, of course, be ordered at the time. All food may be spoiled in the *cooking*, and no attention to the quantity and quality of the food will make up for bad cooking. Food should not only be cooked well, but served *hot*. Hot food is half the battle of life for weak and impoverished systems. Then comes the question of the *times* of meals. Strong and healthy adults require three meals a day. Children and old people require four.

In the construction of public dietaries it should always be recollected that different kinds of food contain varying proportions of flesh-formers, heat-givers, and water. This will be seen from the following table:—

VEGETABLE.				
Names.	Water.	Heat-giving.	Flesh-giving.	Ashes, etc.
	oz.	oz.	oz.	oz.
Wheat . .	2	11	$2\frac{1}{2}$	$\frac{1}{2}$
Oats . .	2	8	3	3
Maize . .	$2\frac{1}{2}$	10	2	$1\frac{1}{2}$
Rice . .	2	$11\frac{1}{2}$	1	$1\frac{1}{2}$
Beans and Peas . .	2	6	6	2
Potatoes .	12	$2\frac{1}{2}$	$\frac{1}{2}$	1

ANIMAL.				
Names.	Water.	Heat-giving.	Flesh-giving.	Ashes, etc.
	oz.	oz.	oz.	oz.
Veal . .	10	$2\frac{1}{2}$	$2\frac{1}{2}$	1
Beef . .	8	$4\frac{1}{2}$	$2\frac{1}{2}$	1
Mutton .	7	6	2	1
Pork . .	6	8	$1\frac{1}{2}$	$\frac{1}{2}$
Eggs . .	12	$1\frac{1}{2}$	$2\frac{1}{2}$	—
Milk . .	$13\frac{1}{2}$	$1\frac{1}{4}$	1	$\frac{1}{4}$
Fish . .	12	1	$2\frac{1}{2}$	$\frac{1}{2}$

Publicans, Duration of Life in.
—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Public Health Acts.—See SANITARY ACTS, PROVISIONS OF.

Puddings.—When puddings are light and palatable, they are valuable food, and

are not injurious when eaten as warm as the temperature of the body. Heavy sodden preparations and very hard and ugly plum puddings are condemned alike by the palate and the stomach.

Puddings made with flour are, for the most part, wholesome, when taken in moderate quantity, but are not so easy of digestion as bread, or animal food. Perhaps the most indigestible are the hasty, batter, and Yorkshire puddings.

Puerperal Fever (*Lat.* *puer*, a boy; *pario*, I bring forth).—This is a continued and contagious fever occurring in connection with childbirth. It comes on within a week or ten days after confinement, and must not be mistaken for “weed” or “ephe-mera,” which is a harmless kind of milk-fever. Puerperal fever is a very dangerous disorder, and it is one far easier to prevent than to cure. In some respects it is allied to erysipelas, and those who have been attending such cases have at times given puerperal fever to their patients. It is very important that women should not go into a large general hospital to be confined, for it has been shown over and over again that in that way many only go in to die; and whereas in the surrounding districts no cases may have occurred, yet in a hospital some are sure to occur; and when once it has broken out, it is very difficult to get rid of it. It is far better for a woman to be confined at home in a dirty alley than to go into the most comfortable ward of a general hospital. Nor are special hospitals for women much better in this respect, for the mere herding of the women together when in that state is injurious, and if an epidemic of fever happens to break out, it is attended with dangerous results. No one who has been lately near a case of scarlet fever, or, in fact, any fever, or a case of erysipelas, either as doctor or nurse, should go near a woman in her confinement, and any one attending a puerperal fever case should not, of course, go near another woman in labour. It is only by such strict rules that you can prevent the spread of this fatal disorder.

Puerperal Fever, Symptoms of.

—There is headache, with shivering and rigors; there is a diminution of the supply of milk, and the usual discharge lessens in quantity and even ceases. The temperature rises, the tongue is dry and coated, and there is much thirst and prostration. No spots are, as a rule, observable on the skin, but in some cases there may be small petechiæ. The bowels are generally loose, and the urine is turbid and contains blood or albumen. The mind, at first clear, soon becomes eluded, and the mother will take no notice of her child; delirium, of a low muttering character, comes on, and death takes place generally from exhaustion or syncope.

Puerperal Fever, Treatment of.

—Very little can be done when once the fever is well developed. The woman will, of course, be in bed in a cool, well-ventilated room, but without draughts. The diet must be light and nourishing, and consist of milk, beef-tea, eggs, and stimulants as required for each case. The bed-hangings must be removed, and also any carpet, etc.; these should be heated in an oven, so as to become disinfected. Condyl's fluid should be used freely, or chloride of lime, may be placed in saucers about the room. The patient's strength must be supported as well as possible until the crisis is passed; the treatment will be the same as that described under typhus.

Pulmonary Artery (*Lat.* *pulmonarius*; from *pulmo*, lung).

—Connected with the top of the *right ventricle* is another tube, called the *pulmonary artery*, because it goes direct to the lungs. It is also a large tube, and you could easily put your finger through the opening with which it communicates with the right ventricle. And, lastly, looking at the left auricle, we find there are two or more large veins which pass into it. On tracing these veins, we find they come from the lungs; in fact, they are the tubes which convey the blood to the left side of the heart direct from the lungs.

—For illustration, see VENTRICLE.

Pulmonary Disease, Constitutional Liability to.—When the structure and uses of the lungs are carefully considered, it will be obvious that the original healthy formation of these organs is of great importance. In connection with this subject Dr. Andrew Combe, in his “Principles of Physiology,” makes some remarks which cannot be too widely read. “No fact in medicine,” he says, “is better established than that which proves the hereditary transmission from parents to children of a constitutional liability to pulmonary disease, and especially to consumption; yet no condition is less attended to in forming matrimonial engagements. The children of scrofulous and consumptive parents are generally precocious, and their minds being early matured, they engage early in the business of life, and often enter the married state before their bodily frame has had time to consolidate. For a few years everything seems to go on prosperously, and a numerous family gathers around them. All at once, however, even while youth remains, their physical powers begin to give way, and they drop prematurely into the grave, exhausted by consumption, and leaving children behind them, destined in all probability either to be cut off as they approach maturity, or to run through the same delusive but fatal career as that of the parents from whom they derived their existence.

“Many examples of this kind might be pointed out among the higher classes of society, who are not restrained from following their predominant inclinations by any necessity of seeking subsistence in professional pursuits. And many instances might be referred to in which no regard was shown to the manifest existence of the same disposition in the family of either parent, and in which, consequently, the married state was embittered either by barrenness, which is then the most favourable result, or by the prevalence of disease and delicacy in the progeny. It may not be easy to enforce upon the young and inexperienced the requisite degree of attention to these circumstances; but surely education, especially when backed

by example, might do much, if the young were properly instructed at an early period in the leading facts and principles of the human constitution. Where there are hereditary precocity and delicacy of frame, marriage, instead of being hastened, ought invariably to be delayed, at least till the fullest maturity and consolidation of the system; otherwise the consequences will be equally unhappy for the individual and for his progeny. During growth, and for a considerable time afterwards, the constitution is still imperfect, even in healthy subjects, and wants the enduring strength which it acquires in mature age, and the possession of which marks the period which nature has fixed for the exercise of the functions of reproduction. Many young people of both sexes fall sacrifices to early marriages, who might have withstood the ordinary risks of life, and lived together in happiness, if they had delayed their union for a few years, and allowed time for the consolidation of their constitutions.

“I have urged this point strongly, because hereditary predisposition is avowedly and beyond all doubt the most frequent source of the more serious forms of pulmonary disease, and it would be worse than folly to allow past and painful experience to go for nothing. Medical men have much in their power in preventing such violations of the laws of the Creator, at least when they are regarded, as they always ought to be, as the friends not less than the professional advisers of the family.”

Pulp of Tooth.—See CEMENTUM.

Pulse (*Lat.* *pul'so*, I push or beat).—If the finger be placed upon an artery, what is known as the pulse may be felt: this is because the elastic artery dilates with each beat of the heart at regular intervals. The pulse does not quite correspond to the beat of the heart in time, but occurs just after it, and the farther the artery from the heart, the longer the interval. It follows that the pulse will be quick or slow, regular or irregular, according to the action of the heart at

the time, and therefore it is useful as a guide in many diseases.

Dr. Spenser Thomson has said that "the average pulse of a healthy man in the prime of life may be taken as beating 72 times in the minute; but from this average there is every possible variation, and even in the same individual the pulse varies greatly, according to the period of the twenty-four hours; according to the time of meals; to the posture, whether recumbent, in which it is slowest, or sitting or standing, in which it is most frequent; it varies also according to physical exercise or mental emotion, and also according to external temperature.

"In some persons the pulse is always quick, ranging at 90, or even more; in others it is slow, perhaps not exceeding 40 beats in the minute. Age influences greatly the frequency of the pulse. The following is the table drawn up by M. Quetelet:—

Age.	Average of pulsations per minute.
Birth	136
5 years	88
10 to 15	78
15 to 20	69
20 to 25	69
25 to 30	71
30 to 50	70

"According to other observations, the pulse in many children is found not to be more frequent than it is in adults; as a general rule, however, it is so. It is, moreover, a generally received opinion that the pulse of the aged is slower than that of the young; the reverse is the fact.

The radial artery at the wrist is most convenient for counting the pulse. This is situated about an inch above the wrist joint of the thumb. The pulse is felt by the fore and middle finger together.

Pulse, Healthy.—Variation from a healthy pulse does not consist simply in an increase or decrease in the number of pulsations in a minute. The qualities to notice are the frequency, regularity, and fullness. A healthy adult pulse beats steadily and evenly

M. D.

from seventy to seventy-five times a minute. The number of the pulsations is affected by the position of the body, being more rapid in standing than in sitting, and in sitting than in lying down.

Its *regularity* may be interfered with in two ways—either the motions of the artery are unequal in number and force, a few beats being from time to time more rapid and feeble than the rest, or a pulsation is now and then dropped out; the pulse intermits. These irregularities may be caused by disease within the head, or heart, or stomach, or may result from debility which precludes death.

The *fullness* of the pulse is determined by the sensation given to the finger by the blood as it passes through the artery.

The pulse is said to be *full* if it strikes a large part of the finger pressing it.

Small, if it strikes a small part of the finger.

Hard, if, in spite of firm pressure, it forces its way under the finger.

Soft, when the pulsations are feeble.

Wiry, when the pulsations are hard and small, the flow feeling like a wire.

Jerking, when the blood comes with short, hard knocks.

All these different conditions are to be carefully considered when studying the pulse as an indication of disease or health.

With young children it is extremely difficult to ascertain accurately the number of pulsations in a minute, and the important things to notice will be the regularity and fullness which are more easily discovered.

Pulse of Patient, Observation of.—The pulse ought to be another object of careful observation. By attention to this, much valuable information is gained. Now, in speaking of the pulse, it is not only meant that the number of beats should be recorded; this can be very easily learned; but there are other points in connection with the pulse which those in attendance upon the sick would do well to make themselves familiar with, and from which much true knowledge and clearer insight in regard to a

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case can be obtained. Thus a pulse is sometimes found to intermit. The number of intermissions and the period of their occurrence should be carefully observed and noted down. In one pulse a beat may be wanting in every six or seven pulsations, or you may have a series of beats all succeeding each other in perfect regularity, followed by a series in which the pulsations are more or less irregular.

Again it should be noted whether the pulse is hard and raises forcibly the fingers with which it is being felt, or whether it is soft and compressible. There are other peculiarities in connection with the pulse which should also be learned. Thus in aneurism the character of the pulse may be described as "splashing." When the contraction of the left ventricle of the heart is prolonged and forcible, it gives rise to a "full" pulse; that is to say, to a pulse the volume of which is greater than usual. Fulness of blood, technically called *plethora*, also gives rise to this kind of pulse, whereas anything which causes a general deficiency of blood throughout the body gives rise to a pulse which is termed *small*.

Thread-like is a term which is applied to a pulse when it is very small. In acute inflammations, or where there is risk of hæmorrhage, the pulse has a peculiar throb. These different characters of the pulse can only be learned by careful observation at the bedside; but to know them is of great value to all who are in attendance on the sick. In taking the pulse of a patient, the fore and middle fingers of the right hand should be made use of, and the number of beats counted by means of a watch having a seconds hand. The pulse of a healthy adult beats about seventy times in a minute. The pulse of a woman beats more rapidly than that of a man. During sleep the pulse beats less rapidly than when awake. Only the facts in connection with these various points ought to be reported, the interpretation of their meaning belongs to the medical man.

Pump Water, Cholera from.—

See CHOLERA FROM PUMP WATER.

Punch.—This is a national beverage, composed of spirits, hot or cold water, lemon juice, and sugar. Its day is about past, though Dr. Cullen esteemed it a salutary potion in a moist and variable climate. For the benefit of those who still have a liking for this drink, Colonel Hawker's recipes for hot and cold punch may be given. For the former the formula runs,—One sour, two sweet, four strong, and eight weak; for the latter,—One sour, two sweet, four strong, and twenty weak. The proportions, as a matter of course, are taken by measure.

Pupil of Eye (*Lat. pupillus*, little boy).—The globe of the eye is divided into an anterior and a posterior chamber by means of a circular curtain which is hung between them. This membranous curtain is movable, and in the centre there exists the opening termed the *pupil*, which is enlarged or diminished, according as the iris contracts or dilates. The iris is of different colours in different individuals, and hence the appearance of what we call black, blue, or hazel eyes.

Pure Water.—Absolutely pure water consists only of oxygen and hydrogen, but such an article does not exist in nature. The nearest approach to pure water is the distilled water of the chemist: but even this is not absolutely pure, and it begins to absorb gases the moment it is exposed to the air.

Melted ice and snow are, perhaps, the purest forms of water that can be obtained naturally. Rain water, being the condensed vapour which is constantly given off from the surface of seas, lakes and rivers, and therefore the product of a natural distillation, is also very pure, if collected as it falls in clean vessels. Practically, if it is obtained from clean slate or galvanized iron roofs, and preserved in suitable cisterns, it is the best water for our use; but very often impurities from the surfaces upon which it descends, impurities from the pipes through which it flows (such as those of lead), and

impurities of storage from foul cisterns, etc., render it less suitable for drinking and cooking purposes than properly selected well water.

Purgative Pills.—See PILLS.

Purgative Powder.—See POWDERS.

Purification of Blood.—See RESPIRATION, PURIFICATION OF BLOOD BY.

Purification of Rooms (*Lat. purus*, clean; *facio*, I make).—To purify a room after a contagious disease, first stop up all the cracks about the windows and doors with strips of paper dipped in flour paste; stop the chimney and the keyholes; and then, before moving anything out of the room, disinfect it thus:—

Put large pans of chloride of lime about the room, and pour over it very strong vinegar; chlorine gas will be disengaged; hurry from the room.

A simpler process is to sprinkle sulphur on tin plates raised on bricks, and stood here and there about the room; light it and hurry away. The fumes will bleach the colour out of any articles exposed.

Purslane.—This is a pleasant salad herb, and so wholesome that it is a pity it is not more used for that purpose. It is excellent for those who are troubled with scorbutic disorders.

Purulent Ophthalmia.—See OPHTHALMIA, PURULENT.

Putrid Water, Purification of (*Lat. putridus*, stinking).—Putrid water should always be purified by boiling it together with charcoal, or charred sticks, as low fevers and dysenteries too often are the consequences of drinking it. The mere addition of charcoal largely disinfects it. Bitter herbs, if steeped in putrid water, or even rubbed well about the cup, are said to render it less unwholesome. The Indians plunge hot iron into putrid water.

Pyæmia (*Gr. puon*, pus; *haima*, blood).—This is a disease, with well-marked constitutional and local symptoms, which is supposed to be due to the introduction into the system of pus, or the constituents of pus. It is closely allied to puerperal fever and erysipelas, and is often connected with inflammation of one or more veins. Some few cases of this disease have been reported in which the patients are quite free, at the time of the attack, from wound or sore, but usually the pyæmic symptoms follow a severe injury or a surgical operation, or occur in the course of some suppurative affection. Pyæmia often results from compound fractures and operations on the bones, especially amputations, and is one of the chief causes of death in the surgical wards of large city hospitals.

Pyæmia, Predisposing Causes of.—The following are the predisposing causes of this disease:—Exhaustion from a long previous illness, as dysentery or fever, or from deprivation of food; organic disease of the kidneys; profuse hæmorrhage during or after an operation; unhealthy employment and residence in foul and badly ventilated quarters; chronic alcoholism and intemperance, both in eating and drinking. The most frequent predisposing causes are impure air, such as is contained in overcrowded wards in a large hospital, and neglect of the patient's wounds leading to the accumulation of decomposing and putrid material about the raw surfaces.

Pyæmia, Symptoms of.—The constitutional or general symptoms of pyæmia resemble those of typhoid fever; the local symptoms consist in the formation of abscesses in the liver, lungs, and joints, and occasionally in hæmorrhagic and pustular affections of the skin.

Pyæmia, Treatment of.—The treatment of pyæmia, like that of other acute and exhausting diseases of a typhoid character, usually consists in the free administration of alcoholic stimulants and con-

centrated fluid nutriment. It need hardly be said that the best professional skill must be employed. Quinine, in large doses, seems, in some cases, to do good. Strict attention should be paid to the nursing of the patient, who is generally quite helpless. The room should be well ventilated and freed of carpet and all possible articles of furniture. Some disinfectant solution should frequently be sprinkled over the floor, and care should be taken to remove and disinfect at once soiled sheets and bed-clothing, and to burn the dressings at every change.

The duration of an attack of pyæmia varies much in different cases. Death may occur on the third or fourth day, or the symptoms may continue for a month or six weeks, and then terminate fatally. In acute pyæmia, death most commonly takes place between the seventh and ninth days. Cases are sometimes met with in which the pyæmic symptoms are slight, and are prolonged for a period of three or four months, or even longer. To this form has been given the name of chronic pyæmia. Pyæmia is a very grave affection, and when acute and associated with frequently repeated chills and mischief in the lungs, is, in almost all, if not all, cases rapidly fatal. Indeed, recovery from any form of pyæmia is a very rare occurrence.

Pythagorean, or Vegetarian Diet (From Pythagoras, an ancient Greek philosopher who advocated the use of vegetables as food).—"The Pythagorean diet," says Buffon, "although extolled by ancient and modern philosophers, and even recommended by certain physicians, was never indicated by nature. If man were obliged to abstain totally from flesh, he would not, at least in our climates, either exist or multiply. An entire abstinence from flesh can have no effect but to enfeeble nature. To preserve himself in proper condition, man requires not only the use of this solid nourishment, but even to vary it. To obtain complete vigour, he must choose that species of food which is most agreeable to his constitution; as he cannot preserve himself in a

state of activity but by procuring new sensations, he must give his senses full stretch, and eat a variety of meats, to prevent the disgust arising from an uniformity of nourishment."

Quail.—See BIRDS AS FOOD.

Qualifications of Nurse.—See NURSE, QUALIFICATIONS OF.

Qualities of Wines.—*Sweetness* in wine depends on two circumstances—either on the natural richness of the grape, as in Canary and Tokay wines, or on their imperfect fermentation, by racking them off too soon into other vessels, or adulterating them by an addition of must.

Sharpness in wine proceeds, again, from three causes—from the nature of the grape, as is displayed in all the northern wines; or from an active fermentation, when the wine is apt to produce gouty symptoms, by its injuring the tone of the stomach; or from the wine having been too long kept, and passing in part into the acetous state.

Flatness, or want of poignancy in wine, depends on either an insufficient fermentation, as where it is checked by the addition of brandy; or on its age, or its being too long kept without the access of air to admit the acetous process, when it turns simply vapid.

Briskness or poignancy is always the effect of an active fermentation, and of a crude and not fully matured state, which, though agreeable, renders the wine more injurious. It is this state which has occasioned a division of wines into those wines which confuse the head and those that are more permanent in their effects, and produce fever. Wines, therefore, that long retain their flavour when poured out are highly intoxicating.

Strength of wine depends entirely on the proportion of alcohol or spirit; but its effect on the body is not entirely regulated by this rule. Wine diluted sooner intoxicates than unmixed, by effecting a larger surface of the stomach, and occasioning its

quicker diffusion over the system ; and in proportion to this quick diffusion are its effects also of a temporary nature.

Smoothness in wine is connected with its sweetness or mellow state, but is different from flatness or vapidty.

Roughness in wine arises from the natural acidity of the grape, its want of maturity, artificial additions giving it this quality, or a mixture of husks with the must. This taste of wines renders them gratefully stomachic, powerful in counteracting acescency, and tonic to the stomach and bowels.

The colour has in general little influence on the qualities of wines, and is generally adventitious, being often given them at a late period, when in the merchant's hands.

Quantity of Food Needed by Individuals.—This climate being excluded from consideration, depends on these general conditions :—

1. The organization.
2. The kind and amount of work done.
3. The quality of the food eaten.

Some men and some races, with the same climate, and amid the same conditions, need more food than others. Large people do not necessarily eat and drink more than small people, for other conditions will vary ; but in the average they will certainly need more.

Small, thin people, sometimes, are very active and laborious, and so consume a quantity of nutriment that amazes those who think that size and a great appetite go together. In small, nervous organizations the force supplied by the food is expended in labour of the brain or muscle instead of being stored up. The thin man and the fat man may both have the same income of food, but the one spends as he goes, and the other is economical and accumulates.

Quartan Ague.—See AGUE.

Quassia Infusion.—See INFUSIONS.

Quickening.—This symptom, as giving evidence of the existence of pregnancy,

is one which, isolated and viewed by itself, fails to yield any proof beyond that which is presumptive, and consequently occupies a place in the same category with those already mentioned when looked at individually. The term “quickening” is used to express the time in a pregnancy when a woman first becomes conscious of the movements of the child in the womb. The popular idea, that up to this time the child in the womb is dead, and that these movements are the first indications of life, is, it need hardly be said, erroneous.

Quick Lime (A.-S. *cwic*, living; *cwician*, to make alive).—Quick lime is a cheap and useful agent for admixture with animal and other matters, as it absorbs moisture and many noxious gases, and by its antiseptic properties retards, and even arrests, putrefaction. It has, however, this objectionable feature, that it eliminates and sets free the ammoniacal gases. Lime is especially convenient for use as an antiseptic, and is highly to be recommended for local applications, as in whitewashing and the sprinkling of gutters, cellars, damp surfaces and putrescent substances, and for temporarily arresting putrefaction. Lime should be used dry and unslacked, except it be for the special purpose of combining with carbonic acid gas. For this end it should be reduced to creamy hydrate, and in overcrowded apartments for the sick it may be usefully employed in this way, distributed in shallow plates.

Quick Lime in Eye.—See EYE, QUICK LIME IN.

Quince.—The strongly flavoured fruits known as quinces are sometimes added to apple-pies and puddings: they make an excellent marmalade, and also an agreeable jelly. Quince seeds are rich in mucilage. It used to be a strange superstition that if a mother would eat quinces her children would be ingenious.

Quinine Pills.—See PILLS.

Quinsy (*Fr.* esquinancie; *Gr.* ku-nangche, sore throat; figuratively taken from dog-throttling; from kuon, dog; ancho, I throttle).—This is a severe form of sore throat, in which the inflammatory action is not confined to the mucous membrane, but involves the tissues beneath it. It is quite liable to go on to what is called suppuration, or the formation of pus. The organ most prominently involved is the tonsil; but the palate and uvula, the base of the tongue, the valve of the air passage, the back of the throat, and the tissues which connect these various structures, are all liable to be involved to a greater or less extent. It occurs more frequently in individuals with diseased tonsils than in other persons, and is most frequent in children and young adults. It is more serious in children than in adults, and in individuals with enlarged and diseased tonsils.

Quinsy, Symptoms of.—Quinsy usually begins with a chill, and this is followed by fever in twenty-four hours. Pain in the throat is an early symptom. All the visible structures of the throat are inflamed and swollen, the tonsils in particular—sometimes only one of them, sometimes both of them, but usually one much more than its fellow. The swollen tonsil may project beyond the middle line of the throat, or the two tonsils may touch. They are usually covered with whitish or yellowish creamy secretions. The pain in the tonsil sometimes runs up along the fold behind it into the ear, with the venethole of which it is continuous. There is indistinctness of speech, difficulty and pain in swallowing, and difficulty of breathing if the swelling is very great. The parts become dry, the taste is impaired, and the breathing offensive. Sometimes the saliva dribbles from the mouth because it cannot be swallowed. Sleep becomes difficult or impossible when the mechanical impediment to breathing is great, or when the nervous system is excited by fever and suffering. Children are liable to delirium and convulsions.

The disease lasts longer than common

sore throat; and though the tendency of the attack is to recovery in most instances, there are not a few in which it is fatal from the formation of burrowing abscesses, which inflict irreparable injury. In many instances an abscess forms in the tonsil, and when this bursts spontaneously, or is discharged by the surgeon's knife, relief to pain is usually immediate, and the inflammatory process soon subsides, provided there are no more abscesses. An abscess that bursts spontaneously may suffocate the patient by flooding the air-passages, but this is infrequent. It is best and safest, however, to submit to an operation if suggested by the medical attendant. A child tormented for days by sleeplessness from pain will sometimes go to sleep on the lap of its mother or nurse after the discharge of such an abscess, even before the surgeon has wiped his knife.

Quinsy, Treatment of.—Nothing is to be said about the treatment of these cases, as they are too important to be entrusted to untrained hands. It is quite likely, however, that the use of gargles will be suggested in the treatment of this disease. They are rarely of any service, chiefly because their use entails a great deal of pain. They may be entirely superseded in the treatment of this and other forms of sore throat by the use of sprays and douches propelled from the so-called atomizer, so frequently in use for diffusing sprays of Cologne water and the like. The use of these sprays entails no pain, is really grateful and soothing, and the fluids reach the remoter parts of the throat which are never reached by the gargle. A gargle as ordinarily used only reaches the palate and base of the tongue as a rule, as may be seen by experimenting with coloured water—indigo water, for example. To reach the back part of the throat, it must be half swallowed; a difficult practice, and too painful for the subject of a sore throat. It is better to try and bring the fluid of the gargle in contact with the sore parts by holding it in the mouth, and then gently turning to one side and to the other, back-

ward and forward, so as to let the fluid bathe the parts in succession, without making any gurgling noise by forcing the air through it as in the usual method. Another good plan is to carry the fluid back to the root of the tongue in a teaspoon, and then pour it over the parts as the head is thrown back, which will bring it in contact with the deeper structures of the throat; then the sides of the throat are bathed by appropriate motions of the head to either side; and the process is completed by suddenly bringing the chin down to the breast as the fluid is ejected, so as to bathe the middle portion of the throat, the tonsils, palate, and roof of the mouth.

"When allowed to progress beyond a certain point," says an American physician, "very little can be done in quinsy except to hasten suppuration. But if the patient applies in time to a physician possessing the requisite knowledge, there is seldom occasion for any one to have an attack of quinsy. Medical science has achieved one of its greatest triumphs in discovering a means of arresting the progress of this painful disorder. The writer has been subject to occasional attacks of quinsy, but recently he had the good fortune to consult Dr. James Simpson, of Philadelphia, who dissipated a threatened attack by the following treatment:—

Mix—Tincture of iron . . . ½ ounce.
Sulphate of quinine . . . 24 grains.
Chlorate of potash . . . 2 drachms.
Glycerine 2½ ounces.
Syrup ½ ounce.

"Take two tablespoonfuls every two hours in a wineglass of water. The peculiarity of this prescription is that the chlorate of potash is not dissolved.

"As a gargle, dissolve an ounce of chlorate of potash in a pint of water, and for external application use the following liniment:—

Oil of amber (rectified) . . . ½ ounce.
Oil of turpentine . . . 2 ounces.
Camphora 3 drachms.
Castor oil 2 drachms.

To be rubbed well frequently over the throat.

"This treatment the doctor referred to has found in an extensive practice to be almost a specific, not only for incipient attacks of quinsy, but for most inflammatory diseases of the throat, including even diphtheria."

Quotidian Ague.—See AGUE.

Rabbits and Hares.—The hare and rabbit when eaten as food are sufficiently wholesome and nutritious. The flesh of the rabbit is softer, more digestible, and less heating than that of the hare; but it is not so nourishing. Wild rabbits are both more digestible and more palatable than such as are domesticated.

Race, Its Connection with Health (*Fr. race; Old German, Reisa*, family line; from *Lat. radix*, root).—The chief modifying influences or agencies that tend to produce disease are race and temperament, but of these the former is the more general, if not the more potent. In this country we have few opportunities of seeing the effects of this modifying element, but in lands inhabited by mixed races it is very observable. In the United States, for example, the English and Welsh seem more liable to be affected by scarlet-fever, diphtheria, croup, apoplexy, and paralysis, and enjoy a comparative immunity from consumption, typhoid and typhus fevers. Among the Irish there is a marked liability to consumption, and an extraordinary mortality from Bright's disease. The Germans show a comparative immunity from consumption, scrofula, and cancer, and a decided liability to small-pox, typhoid and typhus fevers, and other febrile affections. The Swedes, Danes, and Norwegians exhibit a greater tendency to dysentery, diarrhoea, typhoid and other fevers, with a remarkable exemption from apoplexy, paralysis, cancer, Bright's disease, and bronchitis.

Rachitis, or Rickets (*Gr. rha'chis*, the back bone).—The medical name of this complaint was given to it by Glisson, who first described it, partly because he con-

ceived the vertebræ to be the bones most commonly implicated; but chiefly, it would appear, from the resemblance to the English name *rickets*. His doctrine was erroneous; and the error perpetuated by the misnomer has led to serious mistakes in practice as well as theory. The spine is undoubtedly liable to partake with the rest of the skeleton in the morbid condition of rickets, but certainly not in a greater degree than the other bones.

This malady seldom appears within the ordinary period of lactation, or after puberty. It is ushered in and attended throughout by general febrile disturbance, and is closely connected with a peculiar morbid condition of the nutritive functions. The opinion that it is of scrofulous origin has lately been strongly controverted, and does not in reality appear to be well supported by facts. It is most common among the poor, and in closely peopled districts, as all the diseases of children are; but it is by no means confined to either, or to children whose constitutions are apparently the most feeble in other respects. Indeed, it is a frequent remark, that the most robust and powerful men exhibit tokens of having been rickety in their childhood. Among such indications are smallness of the pelvis, with inward or outward curvature and disproportionate shortness of the lower limbs. This sudden check to the development of the skeleton, constantly observed in rickety children, with the distortion arising from the unnatural softness of the bones, is the most usual cause of the short stature, as well as the proverbial ugliness of dwarfs.

In extreme cases of this complaint the head is generally small and pointed: no longer supported by the yielding and shortened neck, it sinks down between the shoulders; the occiput is thrown back, and almost touches the hump formed by the incurvated spine behind the chest; the chin is thrust forward, giving an expression to the features very characteristic of the dwarf, and rests upon the breast bone, which is very prominent; in each side the ribs are flattened, and bulge in upon the lungs. The

shoulders, losing the support of the wreathed and twisted clavicles, approach towards each other in front, drawing with them the scapulæ, which stick out laterally, and add considerably to the deformity as seen from behind; the arms, though bent and in reality shortened, seem of disproportionate length; the lumbar spine is thrust inwards; the pelvis is small and flattened; the thighs are bowed forward; the knees, with their patellæ at the side instead of in front of the joint, touch or overlap each other; while the feet are set wide apart, a sudden twist above the ankle still permitting the soles to be set to the ground. Such are some of the varied changes which exhibit a melancholy proof of the prevalence of the disease in every part of the bony frame, and almost defy description. Of course such extreme cases of rickety distortion are comparatively rare; yet almost daily instances are seen by those whose duty calls them into the unwholesome courts and alleys of the metropolis, and slighter examples of the affection are extremely common.

Recovery even from considerable degrees of this affection is more frequent and rapid than might be imagined; but the pelvis and lower limbs, which, as above mentioned, are the most commonly and extensively implicated, seldom completely regain their natural proportions. This fact, as it regards the female pelvis, is worthy of notice, being the cause of by far the most dangerous kind of difficult parturition. It is in extreme cases of this sort that the Cæsarean section has been practised.

Radishes (*Lat. radix*, root).—All the varieties of radishes have a pungent and acrid taste, in consequence of a peculiar stimulating matter which resides in the cortical part of the root. They may be said to contain little else than water, woody fibre, and acrid matter, and cannot therefore be very nutritive. They may act as a stimulant and prove useful, but they ought never to be eaten when old, as the quantity of inert matter in such a condition is apt to disagree with the stomach.

Radius (*Lat.* radius, the spoke of a wheel, or ray).—The exterior and smaller bone of the forearm, reaching from the elbow to the wrist.—*See* ULNA.

Rage, Characteristic Symptoms

Of.—Speaking of the characteristic symptoms of rage, Mr. Darwin, in his “*Expression of the Emotions in Man and Animals*,” says:—

“Under this powerful emotion the action of the heart is much accelerated, or it may be much disturbed. The face reddens, or it becomes purple from the impeded return of the blood, or may turn deadly pale. The respiration is laboured, the chest heaves, and the dilated nostrils quiver. The whole body often trembles. The voice is affected. The teeth are clenched or ground together, and the muscular system is commonly stimulated to violent, almost frantic action.”

Railway Injuries.—The ill effects following injuries met with in railway accidents are of a somewhat peculiar nature, irrespective of such forms of accidents as are mentioned elsewhere, such as fractures and dislocations. These injuries consist of concussions of the spine and spinal cord, and from the frequent absence of outward signs, and the obscurity of the early symptoms, are of a very insidious character.

A well-known author, speaking of this class of injuries, says: “That in no ordinary accident can the shock be so great as those that occur on railways. The rapidity of the movement, the momentum of the person injured, the suddenness of its arrest, the helplessness of the sufferers, and the natural perturbation of mind that must disturb the bravest, are all circumstances that of a necessity greatly increase the severity of the resulting injury to the nervous system, and that justly cause these cases to be considered as somewhat exceptional from ordinary accidents. This has actually led some surgeons to designate that peculiar affection of the spine that is met with in these cases as the railway spine.”

It is desirable now to advert to such mat-

ters as relate to those cases where the fact of injury sustained on a railway has been the cause of litigation. Concussion of the spine from a direct and severe injury to the back may terminate, according to the authority we have just quoted, in four ways:—
1. In complete recovery, after a longer or shorter time. 2. In incomplete recovery. 3. In permanent diseases of the spinal cord and its membranes. 4. In death.

It is a very remarkable circumstance that although the patient has apparently sustained in many cases a very trifling injury, the result is widely disproportionate, the reason of this being that the symptoms indicative of concussion of the spine and of the subsequent irritation and inflammation of the cord and its membranes are so slowly progressive. A patient is often quite unaware that anything serious has happened, feeling, perhaps, only violently jolted, and a little giddy or confused. After a while, however, when he has reached home, the effects of his apparently simple injury begin to declare themselves. “A revulsion of feeling takes place; he bursts into tears, and becomes unusually talkative, and is excited; he cannot sleep, or if he does, he wakes up suddenly with a vague sense of alarm. The next day he complains of feeling shaken or bruised all over, as if he had been beaten or had violently strained himself by exertion of an unusual kind. This stiff-strained feeling chiefly affects the muscles of the back and loins, sometimes extending to those of the shoulders and thighs. After a time, which varies much in different cases, from a day or two to a week or more, he finds that he is unfit for exertion and unable to attend to business.”

Such is generally the early history of a case of railway concussion. Sometimes the serious symptoms begin to develop immediately after the receipt of the injury, and in some cases not till long afterwards, and most marked and distinct changes are visible in the countenance, the state of the memory, the thoughts become confused, all business aptitude is lost, the temper becomes irritable, the sleep disturbed, restless and broken,

there are often loud and incessant noises in the head, the vision is frequently affected in various ways, the hearing, taste, smell, and the sense of touch become perverted, the sense of speech is rarely affected, and usually the attitude of those afflicted is peculiar. There is a loss of freedom in the efforts of motion or movement, and the individual appears afraid to make such efforts; the gait, again, is very characteristic; he walks unsteadily in a straddling manner; the power of walking is very limited, and he is unable to ride; the nervous power of the limbs will be found to be affected; sensation and motion, or both, may be impaired. Coldness of one of the extremities, owing to loss of nervous power and defective nutrition, is often noticed. The prognosis in these cases is very unfavourable, and patients have never been known to recover completely and entirely, so as to be in the same state of health as before the accident.

With regard to the treatment of concussion of the spine brought on by such injuries, the first thing obviously is complete rest, and the patient should be compelled to lie on a prone couch, and the mind must be kept as much as possible at rest also; ice bags over the injured part of the spine; internally, the bi-chloride of mercury in quinine or bark; nux-vomica, strychnine, and iron are all of great service in certain cases. Salt-water douches to the spine, and galvanism are recommended in some instances. The great thing to be done is to endeavour to improve the general health and prevent the development, if possible, of secondary diseases, such as phthisis, dependent on mal-nutrition, and a generally broken state of the health.

Raisins (*Fr.* raisin; *Lat.* racemus, fruit stalk of grapes).—All the kinds of raisins have much the same virtues; they are nutritive and balsamic, but they are very subject to fermentation with juices of any kind; and hence, when eaten immoderately, they often bring on colic. There are many varieties of grape used for raisins; the fruit of Valencia is that mostly dried for

culinary purposes, while most of the table kinds are grown in Malaga, and called Muscatels. The finest of all table raisins come from Provence or Italy; the most esteemed of all are those of Roquevaire; they are very large and very sweet. This sort is rarely eaten by any but the most wealthy. The dried Malaga, or Muscatel raisins, which come to this country packed in small boxes, and nicely preserved in bunches, are variable in their quality, but mostly of a rich flavour, when new, juicy, and of a deep purple hue.

Rami of Jaws.—*See* JAWS.

Raphé.—*See* TONGUE.

Raspberry (so called from the rasping of its prickles).—The ripe raspberry deserves the first rank amongst the small-seeded fruits. It is a wholesome fruit with a peculiar slightly acid flavour, and makes a delicious preserve.

Raspberry Vinegar.—This is a wholesome preparation made by steeping raspberries in vinegar, which assumes the flavour of the fruit in addition to its own acidity. When diluted with water, it forms a pleasant drink in febrile affections, and is useful in cases of sore throat.

Raspberry Wine.—The most delicious of the home-made wines are those produced from the strawberry and raspberry, and they are equally agreeable to the smell as to the taste. From their flavour they are considered as possessing a powerful cordial quality in case of fainting, as well as in other low nervous states; they are likewise of a diuretic nature, and are employed in gravel and disorders of the kidneys. They form in summer, like other home-made wines, a refreshing, cooling drink, which, in point of flavour, exceeds them.

Ratafia (*Maltese*, arak, arrack; *tafia*, a spirit distilled from molasses).—This is a liqueur prepared by imparting to ardent

spirits the flavour of the kernels of peaches, cherries, etc., or bitter almonds. Different receipts are followed in preparing it. Ratafia is often used to give an agreeable flavour to pies, puddings, and other articles of pastry. As a cordial, independent of its being too heavy and luscious for the stomach, it is, from its pleasantness, one of the most dangerous; for, from it and similar liqueurs, many have been tempted to take the first step in the practice of dram-drinking.

Reading to Patients.—"The extraordinary habit," says Miss Nightingale, "of reading to one's self in a sick room, and reading aloud to the patient any bits which will amuse him, or more often the reader, is unaccountably thoughtless. What do you think the patient is thinking of during your gaps of non-reading? Do you think that he amuses himself upon what you have read for precisely the time it pleases you to go on reading to yourself, and that his attention is ready for something else at precisely the time it pleases you to begin reading again?"

Recipes, Useful, for Disinfectants.—*See* DISINFECTANTS, USEFUL RECIPES FOR.

Record Book, Sanitary.—*See* SANITARY RECORD BOOK.

Rectum (*Lat. rectus*, straight).—The *rectum*, the last six or eight inches of the intestine, is so called because it is less flexuous than any other part of the intestinal canal. It begins at the upper part of the *os sacrum*, where the colon ends, and going down obliquely, it is tied to the extremities of the coccyx by areolar tissue behind, and is connected with the neck of the bladder in men, but in women with the vagina, before; whence arises the sympathy between those parts. The coats of the rectum are more thick and fleshy than those of any other of the intestines; it has in general no valves, but several rugæ; had the former existed, the expulsion of the *fæces* would have suffered inconvenient delay. The figure of the

rectum varies, as it is full or empty; when empty, it is regularly cylindrical, and contracts in transverse folds: it is capable of very great distension, and may even be extended to the size of a large bladder. The quantity of *fæces* that sometimes accumulates is prodigious, and cannot be removed except by mechanical means.

Rectus, or Straight Muscle.—*See* MUSCLES, THEIR USES AND ACTION.

Red Blood Globules.—*See* BLOOD GLOBULES.

Red Gum.—*See* ECZEMA.

Reducible Hernia.—*See* HERNIA, REDUCIBLE.

Refrigerants (*Lat. refrigero*, I make cold; from *re*, again; *frigero*, I cool; from *frigus*, cold).—Refrigerants are what we commonly call cooling medicines. They include saline and acid substances, some of them powerful, some of them weak. Refrigerants are at least of two kinds: some have actually the power to diminish temperature, some only seem to allay thirst. Those which can diminish temperature are saline substances, given whilst dissolving. Some of these, as is well known, possess a power of diminishing temperature sufficient to freeze water. Others again, like acid fruits, seem only to possess refrigerant powers by allaying thirst; for a dry, parched mouth is one of the most prominent indications of fever, and this being relieved, there is often a belief that the bodily temperature is actually lessened. Of the salts which possess the power of diminishing temperature when dissolving, saltpetre may be taken as a type, though there are many others which are never given internally. The juice of grapes, oranges, and lemons, with the acids they yield—viz., tartaric and citric—are also useful, mainly, as already pointed out, in relieving thirst and moistening the parched mouth.

There is a very common and very old no-

tion that what are called *cooling* medicines should be taken at particular times of the year, especially in the spring. Many a poor child has been condemned to a pot of brimstone and treacle merely because Nature had begun rejoicing at the departure of winter. Parents, it will readily be acknowledged, are not always prepared to carry out these views in their own case. There was a great deal of importance attached to seasons in the treatment of diseases by the old medical authorities; but we find very little on this subject in our best modern works. We can, indeed, see no sufficient reason why we should take physic unless we are ill.

Regulation of Hours of Labour.

—See HOURS OF LABOUR, REGULATION OF.

Relapsing Fever (*Lat.* relapsus, fallen back; from *re*, back; lapsus, fallen; from *labor*, I slide, or slip).—This contagious disease, sometimes called famine fever, is chiefly met with in the form of an epidemic in periods of scarcity and famine.

Relapsing Fever, Symptoms of.

—Relapsing fever is characterized by a very sudden attack of shivering or rigours; a quick, full pulse; white, moist tongue, afterwards becoming yellow or brown; pain at the pit of the stomach, and vomiting; an enlarged liver and spleen; constipation of the bowels; hot and dry skin; no marked rash on the skin; high-coloured urine, and pain in the limbs, with severe headache; restlessness, and often delirium; then comes an abrupt cessation of the symptoms, on or about the seventh day, generally accompanied by copious perspiration. The febrile symptoms are then absent completely for a few days, the tongue becomes clean, the appetite returns, and the patient can often get up and walk about. Then comes the relapse, on or about the fourteenth day from the commencement of the fever, running a similar course to the first attack, but shorter in duration, and generally terminating about the third or fourth day of the relapse. Recovery generally ensues then; but there

may be a second, third, or even a fourth or fifth relapse in some cases.

Relapsing Fever, Treatment of.—The best treatment to be adopted is that which consists in placing the patient in a large, well-ventilated room, in promoting cleanliness, and in giving milk and other nourishing diet. At the commencement of the attack the bowels should be opened, if required, by a purgative; the skin should be frequently sponged with tepid water, but only one part of the body should be exposed at a time, so as not to cause a chill to the surface. The vital powers must be kept up by milk, beef-tea, egg and milk, etc. Stimulants are not often wanted, but must be given with care when there is much prostration and failure of the heart's action. If there is any suppression of the urine, the bowels must be freely opened, the patient put in a hot bath, and dry-cupping applied to the loins.

Relapsing Fever, Treatment of, in Convalescence.—During convalescence, tonics must be given, and the mineral acids with quinine are the best for this purpose. For some time after the fever has ceased the patient requires a liberal and generous diet before he will sufficiently regain his strength.

Religious Observance, Cleanliness as a.—See CLEANLINESS AS A RELIGIOUS OBSERVANCE.

Remarkable Dreams.—See DREAMS, REMARKABLE.

Remittent Fever.—See BILIOUS FEVER.

Remittent Fever.—See FEVER, CHARACTERISTICS OF.

Removal of Persons Injured by Accidents.—Accidents are often rendered more painful and severe by the awkward manner in which, with the best

intentions, the sufferer is carried with the limbs dangling or rolling about.

There is generally little difficulty in finding out a fracture of the leg, thigh, forearm, or upper-arm, especially if it be at or near the middle of the bone, because not merely is the sufferer incapable of lifting up the limb, but in an attempt to do so, there will be an unnatural bending and grating motion at the injured part. In many cases of fracture the signs are not so evident, particularly when in the neighbourhood of a joint. A person who has broken his arm, either above or below the elbow, will find it least painful to place the forearm at right angles with the upper-arm, in a broad sling, which will contain it from the elbow to the points of the fingers; and, should he not have far to go, he will find that walking will cause much less pain and shaking than conveyance in a carriage of any kind. If the leg or thigh be broken, a hurdle, door, or shutter, covered with straw, coats, or blankets, may be converted into an excellent litter, which should be laid down by the sufferer's side, who should be gently and quickly lifted or slid upon it, by just as many persons as are sufficient to raise him up a very little from the ground, and by no more, as the greater the number of assistants, the less likely are they to act together effectually. The shutter or hurdle should be carried by hand, two persons at each end talking hold of it, and all marching in broken step as they move along. If a couple of poles can be procured, and fixed across beneath each end of the hurdle, the bearers will carry with less fatigue both to themselves and the patient. If no shutter or hurdle can be obtained, no bad substitute will be made by fastening four stout poles together, and tying a blanket securely to them, so as to resemble the frame and sacking of a bedstead, and upon this the injured person can be laid. Hand carriage in either of these ways is infinitely more easy than being moved in a coach or cart, for every jolt over an irregularity in the road produces motion in the broken bone, and a proportionate degree of pain. Before plac-

ing the person on the hurdle, shutter, or blanket, it is a good plan to string the sound limb close to the broken one, and tie them firmly with two or three handkerchiefs; this will give great support to the injured limb, and prevent any unnecessary movement. Besides this, a pillow or long pad of straw should be placed on the outside of the limb to render it steady. In placing the limb, great care should always be taken to lay the broken part as nearly as possible in its natural direction; for, if this be not attended to, but the broken part be left bent, it is not improbable that one or other end of the bone will be thrust through the skin, constituting a compound fracture, and thereby greatly increasing the mischief.

Rennet-Whey (*Old Dutch, rennen, to curdle*).—Take a piece of rennet, which is the stomach of the calf prepared for this purpose, and infuse it in a quantity of boiling water, sufficient to remove from it all soluble matter; after pouring off the fluid, take a tablespoonful of it, and mix it with three tablespoonfuls of milk. Place the mixture so prepared before the fire, covering it with a piece of clean cloth. When a uniform curd is formed, remove it, divide it into small pieces with a spoon, and separate the whey by gentle pressure. This forms a very pleasant drink in febrile conditions.

Requirement of Water per Individual.—See WATER, REQUIREMENT OF, PER INDIVIDUAL.

Respiration (*Lat. respiro, I breathe again; from re, again; spiro, I breathe*).—That the cause of death in certain cases, and the rationale of the directions for procedure where animation is only suspended (*see DROWNING*), may be more easily understood, it is desirable under this heading to give a concise description of the natural process of *respiration* in man and all warm-blooded animals.

Respiration is the reception of air INTO the lungs, and its expulsion FROM the lungs; the former act is termed *inspiration*, the latter *expiration*.

By the action of certain muscles, which elevate and depress the shoulder, protrude and draw back the breast-bone, and straighten and relax the muscular and membranous partition, called the diaphragm, which divides the chest from the abdomen, the cavity which contains the lungs is alternately increased and diminished in all its dimensions. When it is increased, the air as naturally rushes into the lungs, and by the same laws, as it does into the body of a pair of bellows, when by raising the handle you increase the dimensions of the cavity. And again, when the cavity of the chest is diminished, the air is as necessarily expelled. This constitutes the mechanism of respiration; but the air thus received into the lungs, and the blood which, in its transmission through the lungs, comes nearly into contact with the air, are both materially altered in their chemical qualities. And so necessary is this chemical change in the quality of the blood to the maintenance of life that if it becomes in any degree interrupted, disease follows, and, if suspended only for a few minutes, death is the inevitable consequence. In this way does life become extinct in drowning, hanging, and suffocation, and also in choking, when any substance sticks in the throat, and so presses upon the windpipe as to prevent breathing.

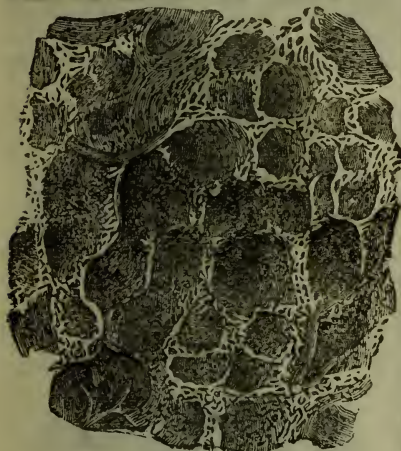
In all such cases, however, you are not to be deterred from making attempts at recovery, although a much longer time than that above specified has elapsed since the person was supposed to have sunk under the surface of the water, or to have been suspended by the cord; for it frequently happens that the drowning person has risen unobserved to the surface, and, in the latter case, that the cord has only constricted the windpipe imperfectly. In every such case, therefore, where signs of commencing putrefaction have not appeared, some attempts at resuscitation should be made.

Respiration, Effects of Stoppage of.—See OVERCROWDING, DANGER OF.

Respiration of Patient, Observation of.—A healthy adult breathes from sixteen to eighteen times a minute, without being conscious of the act of breathing. In sickness, the points to notice, besides the variations from the healthy standard in number, are: 1, whether the breathing is even or regular, or panting and short; 2, whether it is from the upper or lower part of the chest; 3, whether a full, deep inspiration can be taken without pain, and at what spot, if any, the pain is felt; 4, whether the breathing is better in one position than another, and in which it is most distressing; 5, whether any sound is made as the air passes through the lungs and air-passages, and what sound; 6, whether there is a difference, and what it is, between the breathing, sleeping and awake.

Respiration, Purification of Blood by.—The manner in which the blood is purified will be better understood by observing the changes which it and the air undergo when they come in contact with each other. About one-fifth of the atmospheric air is *oxygen*—the balance *nitrogen*. On examining the air, however—the breath—as it comes from the lungs, it will be found that the greater part of the oxygen has disappeared, and that another gas—carbonic acid—has taken its place. This new gas, as has been said, is formed by the union of the oxygen from the air with the carbon in the blood. The venous blood, which is heavily charged with carbon, is conveyed to the lungs, as we have told, and then brought in contact with the air—or so near to it that it amounts in fact to the same thing. The air is in the cells, the blood on the outside of them in the minute capillaries, the walls of which are so thin and porous that the oxygen escapes from the air, unites with the blood, burns up its carbon, sets free the carbonic acid which results from the combustion and which escapes through the cells, takes the place of the oxygen in this air and is ejected with it from the lungs. Thus the blood becomes changed—oxygenized, as it is sometimes termed—and at the same time

the air or breath becomes changed also. The one is made pure, the other impure. And this process goes on constantly; every time we inspire, or take in a fresh supply of air, a fresh supply of venous blood is forced into the capillaries around the air-cells: the



PULMONARY BLOOD-VESSELS.

previous supply of blood, being purified, is sent off into the veins of the lungs and conveyed by them to the heart for general distribution. In the accompanying engraving is illustrated the capillary network of the pulmonary blood-vessels in the lungs.

Respiration, Purposes of.—

Respiration, or breathing, is for two important purposes: first and mainly, for the purpose of purifying the blood; and, second, for the purpose of producing animal heat.

The purification of the blood in the lungs is indispensable—so indispensable, indeed, that it would soon cause death if it were to remain unchanged. The venous blood is full of poison which it has acquired in its circulation through the body; and this poison can only be removed by bringing it in contact with the atmospheric air, which is done in the lungs by the process of breathing. This poison is carbonic acid, and results from the union of carbon with oxygen,

two agents which have a remarkable affinity for each other when found in the body. Carbon is obtained from our food; it is of the same nature as charcoal, and, itself, is quite as harmless as charcoal; but when it unites with oxygen, or, as is really the case, when it is burned up by that vital gas, the result or residuum—what we may call the *ashes*—is carbonic acid, a suffocating, deadly poison.

This carbonic acid is the same thing that is sometimes found at the bottom of wells and in mines, and which will kill a person or animal if breathed or inhaled into the lungs. It is also the same as that given off by burning charcoal, which has often caused the death of persons who have allowed it to escape into their bed-rooms.

The blood is sent to the lungs for the purpose of getting rid of this poison. It there escapes through the air-cells and is expired, or thrown off, with the breath. This is the reason why people are suffocated, or their health greatly injured, by breathing the same air over again many times. It becomes more and more charged with this poisonous gas every time it is breathed, and, if continued long enough, will produce death as effectually and certainly as the choke-damp of wells. In badly ventilated rooms, and in buildings containing large assemblies, people are often poisoned in this way, and, if not killed outright, have headaches, nervous depression, and faintings, which often lay the foundation of more serious disease.

Respiration through Nose.—

Although air may enter the body by two avenues—nose and mouth—it is to be remembered that respiration through the nose is the natural method.—See PHARYNX.

Respirations, Number of.—

The number of respirations and the quantity of air inspired vary very much according to the age, sex, and state of the health; but, in a healthy adult, under ordinary circumstances, the number of respirations is from fifteen to twenty in a minute, and the

amount of air about twenty cubic inches in each inspiration. The proportion of carbonic acid gas in the expired air is about one-thirtieth.

Respirators.—People working in factories, chemical laboratories and the like, are quite subject to sore throat independently of any special proclivity thereto; while they are still more likely to suffer if constitutionally subject to sore throat. Such individuals are recommended to wear little respirators in front of the nose and the mouth during exposure, in order to filter the respired air, as it were, and catch these minute particles in their passage towards the throat. There is a variety of respirators in use, under these circumstances, some of which are so arranged as to contain masses of raw cotton or wool, which collect the dust and dirt, and which can be removed from time to time as they become foul. One



FIG. 1.—ORI-NASAL RESPIRATOR.

of these, represented in Fig. 1, is composed of meshes of delicate silvered wire, covered in front with a piece of silk. Pliny mentions that workers in mines were accustomed to fasten bladders before their mouths; and that the Roman bakers placed cloths in front of their faces when working in atmospheres loaded with dust.

It is often found, too, that individuals suffering from consumption, chronic bronchitis, or even only with undue irritability of the mucous membrane of the throat, are unable to face the air in windy and inclement weather. Sometimes they are unable



FIG. 2.—THE RESPIRATORY VEIL.

to withstand the changes of temperature even on days which promise to be pleasant. Under such circumstances, they are compelled to keep in the house, or to muffle the mouth and nose with a handkerchief, veil or something of that kind when they go out into the open air. The temperature of the respired air is modified by the warmth imparted to the comforter by the hotter air of respiration, while at the same time its pungency is moderated, if too rich in oxygen for the sensitive throat or air-passages. Unmitigated sunlight is known to be often irritating to sore eyes, and in like manner unmitigated atmospheric air is sometimes too irritant to sore throats, sore air-passages, and sore lungs. A respirator of a series of fine metallic meshes, covered with silk, is much used, and may be safely recommended to all whose throat and air-passages are over sensitive. Some respirators are made merely to cover the mouth so as to encourage nasal, or normal, respira-

tion; and others (Fig. 1) to cover both mouth and nose. These appliances are rather unsightly, to be sure, but their use often enables invalids to take regular outdoor exercise in carriage or on foot, instead of undergoing compulsory confinement to the house for fear of catching cold. Ladies may make use of an ingenious respiratory veil, illustrated in Fig. 2, devised by Mr.

engravings themselves. Many of them can be made for home and family use without much, if any, difficulty.

Respiratory Apparatus, Nerves of.—See NERVES OF RESPIRATORY APPARATUS.

Respiratory Tract.—See PHARYNX.



FIG. 3.—COTTON-WOOL RESPIRATOR.



FIG. 4.—SILVER-PLATED WIRE RESPIRATOR.

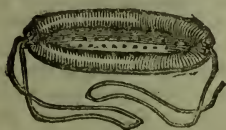


FIG. 5.—LADIES' MINIATURE RESPIRATOR.

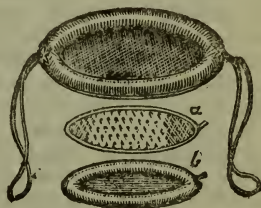


FIG. 6.—THE MANIFOLD RESPIRATOR OF VARIABLE POWER, containing six metallic plates, four of which are movable. The Respirator may be worn with or without the plates a and b



FIG. 7.—ORI-NASAL WIRE RESPIRATOR.

Lenox Browne. It consists of a piece of plain unspotted blonde, with a double thickness of silk gossamer on the lower four inches; the part that covers the mouth and nostrils is stiffened by a layer of thin wire gauze, so that the veil may stand a little away from the mouth and be more comfortable. Such a veil is easily made at home.

In Figs. 3, 4, 5, 6, 7, other forms of respirators are given, the nature and use of which may be recognised, by the names placed below the engravings, and from the

Rest after Delivery.—There is nothing likely to prove more injurious to a young person after her first confinement than to allow a great number of people to come into the room beside her. Too much care cannot be taken to keep the young mother perfectly quiet after her labour is over, and to keep her free from all those disturbing influences which operate so injuriously upon her.

The necessity for rest in the horizontal position after delivery cannot be too strongly

insisted upon, and the fact that so little regard is paid to it renders it all the more necessary to impress every female with right views regarding its importance.

Among the poorer classes of society, where, from circumstances which need not be mentioned, as they will readily suggest themselves to the reader's mind, a woman is unable to obtain that amount of rest which is so necessary for her recovery, the frequent occurrence of womb diseases in after life points to this as the cause. In the case of those, however, whose circumstances remove them above the necessities of the poorer classes, who have nurses and attendants to minister to their every want—who, if they have already a family, are relieved of all anxiety in regard to it by having kind friends or relatives acting for them, by whom they know the comfort and the happiness of their little ones will be as carefully attended to as by themselves—in the case of such there can surely be no adequate excuse if they are neglectful in this respect. But it is difficult to make people understand why there should be this necessity for prolonged rest after confinement. They will tell you they feel quite well; feel strong and able to be up and moving about, and not unfrequently, in spite of all the earnest entreaties of their medical attendant, they leave the horizontal position after three or four days, sometimes even sooner, and may be found by him sitting upon a chair at the fireside.

The reason why a great many women act in this way is because the effects to which such carelessness on their part gives rise are not, at first sight, very apparent. They will tell you that many of their most intimate friends have left their bed on the fourth or fifth day after delivery, and in a few days more have been seen walking about outside, and they ask, "Why may not I?" Besides, there is an undoubted tendency among many women to regard the individual who can thus early leave her bed and her apartment as "clever," and they praise her for what she has done. The present obscures the future, and in consideration of it all

after-consequences are lost sight of. They do not look beyond, and into the history of such of their acquaintance as may be already suffering from carelessness in this respect they do not care to inquire. Could they see the present in the light in which the future would reveal it, they would pity rather than praise her who acts thus. Could they see the picture of a life rendered miserable, of years passed in sorrow and bitterness, the result of carelessness, at the time of some confinement, perhaps long since forgotten, they would doubtless take warning. But as they do not see these things, they remain unimpressed with the necessity there is for rest, believing it merely to be a precaution of an over-scrupulous nature on the part of the medical attendant.

Many women also labour under the impression that when the doctor enjoins upon them prolonged rest in the recumbent posture, he imagines them to be ill, and they think if he only knew how strong they felt themselves, he would not hesitate in permitting them to leave bed before the eighth or tenth day. Now, in the great majority of cases, this is not the reason why the medical attendant keeps them in the horizontal position for this length of time at all. His whole object in keeping a patient recumbent is to permit of the womb regaining, to a great extent, its normal dimensions. After delivery it is always large, and when it is remembered that six weeks or two months have to elapse ere its natural size is regained, the necessity for long rest in the horizontal position will perhaps be more apparent.

The great danger, therefore, which the patient runs in thus leaving the horizontal position too soon is that the proper involution, or contraction of the womb to its normal size, may be interfered with. When this is the case, the ligaments which retain the womb in its natural position are unable to sustain its increased weight; they become relaxed, and, in consequence of this, various displacements may occur. The patient then begins to suffer from a feeling

of dragging and weight about the loins. When these symptoms manifest themselves thus early, it is well, for then the patient has warning of her danger, and by again resuming the horizontal position for a week or so longer, she may prevent the occurrence of more serious mischief. More frequently, however, the changes which take place are more insidious in their nature, and do not manifest themselves at the time, and hence arises the great necessity for careful after-treatment.

It will be a good rule for every woman to observe not to leave her bed after confinement till the ninth or tenth day. She may then be allowed to lie upon a couch or sofa till the expiry of a fortnight, after which she may be allowed to move about upon the same landing for another week. If there be another room immediately adjoining the one in which she is confined, with a door of communication between them, there is nothing to prevent her being removed into it during the second week. This will be a pleasant change to the patient, and will at the same time permit, during her absence, of the other apartment being more thoroughly ventilated. If this change can be accomplished in the manner indicated, advantage should be taken of the patient's temporary absence from the room to have the bedclothes and the mattress thoroughly exposed to the air.

At the end of the third week she may be allowed to come downstairs and move about; but even now care must be taken that she does not remain too long in the standing or sitting posture, but that she reline upon a couch or sofa during some part of each day. Provided the weather be not too cold, she may also now begin to take exercise in the open air. For the first a drive in a carriage will, perhaps, be best; or if it be preferred, she may take a turn in the garden. Gradually, as the patient's strength permits of it, the time devoted to exercise may be increased; but it should always be moderate for some time after confinement.

In cold weather, or in those cases in which confinement has occurred during winter, the

woman had better not venture out of doors till the expiry of the month. By a little carefulness in regulating the exercise thus begun, a woman will be enabled to recover favourably without the occurrence of anything of an untoward nature; but by recklessness at this time she may throw herself back, rendering her recovery more tedious, and consequently impairing the state of her health.

For the patient's first outing after confinement, it will be necessary to choose a good day—not one in which the wind is keen and cutting, and the best part of the day should be selected. If carriage exercise be taken, only a short distance should be traversed; if on foot, the patient must return home free from anything like fatigue. In these drives or walks the woman should be accompanied by an agreeable companion, who will keep up a pleasant conversation, and thus render them more serviceable in restoring the patient's health. By attention to such rules as we have here laid down a good recovery will in general be secured, and the female's health will be thoroughly restored.

Rest, Cry for.—*See* SLEEP, DOING WITHOUT.

Rest, Influence of, on Mind.—

"Periodical rest, it has been satisfactorily proved," says Dr. Moore, "is necessary for the reproduction of that power in the nerves by which the will is enabled to act on the muscles; and hence we learn that a due proportion of repose is essential to the proper manifestation of mind in the orderly use of the body. This is more especially and evidently the case in children; for as growth and invigoration are mainly promoted during sleep, of course, if they be not allowed a sufficiency of it, they are sure to become both mentally and physically feeble and dwarfish, memory and volition becoming alike confused by bodily inaptitude and debility.

"The experience of every one who is in the habit of thinking must have taught him that

the mind acts with more deliberative power in the morning, and also that the thoughts become associated with ideas of exertion whenever the body is refreshed; so that we feel that the time for planning is after the body has been duly rested, and before it is again called into exercise. The memory is clearer in the morning, or, at least, soon after awaking from healthy sleep, because the thinking power is then free from those impressions which crowd on the senses during the activity of the day; for new thoughts arise, together with remembered ideas, in the renewal of nervous power, and the associations of the past are more perfectly perceived and interpreted by the understanding; while the senses, being refreshed, but not strongly excited, our self-consciousness is at the highest, so that our affections, whether good or bad, joyous or grievous, hopeful or despondent, are then most potently experienced.

"The vivacity of thought and expression is, however, most remarkable in the excitement of society, because our intellects are called into play by our sympathies; hence the evening is the favourable time for wit, the flashes of which often partake of the nature of delirium, in consequence of the readiness with which the mind yields to suggestive impressions, since imagination is, of course, most active when the body is so far wearied as to render entire rest of the muscles agreeable, while the brain is yet not so far fatigued as to require sleep, and while the mind is still faintly busy with some object of affection. The dimness of evening is also favourable to meditation, because much light stimulates the optic nerve to a degree that distracts the attention from remembered ideas, and impresses realities too forcibly to permit imagination free exercise. The soul, if sensible of its capacity and worth, looks into its own history when not engaged in using the senses on outward objects; hence the man of genius withdraws himself from things for the sake of thoughts, and catches the images of creation, to arrange them in new order in his mind, according to the habit of his

desires. Thus the poet most glowingly conceives his ideas, and composes his stanzas with greatest facility, when the heavens are calm, and the vesper-star is seen above the clouds, and "all the landscape glimmers on the sight"; but in the morning, which is the historic time, he sees that the winged words and burning thoughts which carried his soul captive need the corrections of sober memory and the schoolmaster, almost as much as the wild reasoning of an ordinary dream would need the severer logic of wakeful experience to reduce it to consistency."

The inestimable advantages of sleep caused the celebrated Kant to observe, "Take from man hope and sleep, and you will make him the most wretched being upon earth."

Rest, Need for.—The necessity for repose is felt by every animated being, and is manifested not only in the general life of all organisms, but in the partial vitality of the senses with which animals are endowed. The sense of smell, for example, no matter how acute it may be at first, becomes, after a while, blunted by continuous exercise, and its original quickness of perception can only be restored by a period of complete rest from being called upon to notice external objects which have the capacity of arousing it into action. So with sight, hearing, touch, muscular strength, and even mental power, all cease to respond to outside stimulants if too continuously excited, and only regain their susceptibility by rest.

Repose may be either partial or general. When, for example, an accountant, after six or eight hours' mental exertion, leaves his books and takes a brisk walk of at least an hour (as he should do daily, morning and evening), the mind takes a partial repose, whilst the muscles of his legs, which have been resting nearly all day, in their turn are exercised and become fatigued. Every human being, however, has need of periodical intervals of general relaxation, during which neither the intellectual nor the bodily powers are in operation, and this general repose of all the organs and functions of animal life

is "tired Nature's sweet restorer—balmy sleep."

Night is the most appropriate time for sleep, because during the silence and calm of the nocturnal hours, repose best restores the lost vigour of the system; those individuals who, for the sake of pleasure and fashion, turn night into day and day into night, do so to the great detriment of their present or future sanitary integrity. Sleep during the day-time is apt to leave a heaviness of the head, a bitter taste in the mouth, and a general feeling of discomfort which continues till evening approaches. Except in hot countries, the after-dinner nap is an enervating luxury to be carefully avoided by sincere seekers after long life and health until after middle life is passed.

Restaurants, Disadvantage of (*Fr. restaurant, eating house*).—A disadvantage of restaurants is that they compel their patrons to select dishes by the names on the bill of fare, and not by their appearance and flavour when brought upon the table. We cannot tell what we most desire until we see articles of food, and inhale their savoury fragrance. French names, with high prices annexed, are at best but poor appetizers. This is the philosophical explanation of the fact that, in sitting down to a public table, we often study the bill of fare in despair, and then decide on a dish which, as soon as it is placed before us, we find we have no relish for.

Results of Experiments in Ventilation.—See VENTILATION, RESULTS OF EXPERIMENTS IN.

Rete Mucosum (*Lat. rete, net; mucus, discharge from nose*).—The deeper, moist, or succulent part of the epidermis or scarf skin, which dips down between all the papillæ of the corium, has received the name of *rete mucosum*, or *rete Malpighii*, from the name of the anatomist Malpighi, who first described it.

It is this epidermal layer which is removed by a blister, and which is frequently

rubbed off in slight accidents, when the surface beneath feels raw and oozes a little clear liquid and possibly a little blood. As long as accident or disease destroys only this outer *epidermal* layer, no scar is produced; but when in any way the *corium*, or true skin, is destroyed, a scar or cicatrice results, varying in severity according to the depth of the destruction. Thus many slight burns remove the epidermis only, whereas those which are followed by any loss of skin or ulceration, will leave scars which may prove very unsightly.

Retention of Urine (*Lat. retentus, held back; from re, back; teneo, I hold; urina, fluid secreted by kidneys*).—This is a condition in which the urine cannot be evacuated from the bladder at all, or only with great difficulty, the former being known as complete, and the latter as incomplete retention. It should not be confounded with *suppression*, in which the urine has not been secreted by the kidneys, and consequently the bladder is empty.

Retention of Urine, Hysterical.—Hysterical retention is a disease of the mind, and depends wholly upon the volition of the patient. Gross mentions a form of retention which is periodical in its nature, and which he ascribes to malarial influences, and accordingly adopts the treatment of miasmatic diseases, as quinine, etc.

Retention of Urine, Symptoms of.—The symptoms consist of a great and urgent desire to pass water, and partial or complete inability to do so; this is accompanied by repeated straining efforts, and violent pain, and extreme distress and restlessness; the countenance assumes an anxious expression, the pulse is quick, and the skin dry. The bladder is more or less distended, according to the protraction of the trouble, and its position may be ascertained by percussion above the pubes. If this condition be not speedily relieved it results in rupture of some portion of the urinary tract, and extravasation of the contents of the bladder

into the surrounding parts. Here the urine acts as a foreign body, and causes an inflammation which soon terminates fatally.

Retention of Urine, Treatment of.—As the treatment of this condition varies with its cause, we shall have to consider them together. The causes are numerous, and may be classified as those due to mechanical obstruction; paralysis of the bladder, partial or complete; hysteria; miasm.

The agents mechanically obstructing the flow of urine are numerous. Organic stricture of the urethra is a very common one, but it causes complete retention only when, after exposure of some kind, or over-indulgence in spirituous liquors or sexual excitement, there is congestion or spasm added to it, and the urethral canal is thus made impervious. A warm bath should be given at once; this failing, the attempt should be made to use a catheter; but if this cannot be done, the administration of ether or chloroform should be superadded. Should these means fail, the only resource left is for the surgeon to "tap" the bladder either through the rectum or above the pubes. The relief, however, is only temporary, the stricture still remains, and some operation must be resorted to for its relief.

Spasmodic contraction of the muscle surrounding the neck of the bladder, or of the muscular coat of the urethra sometimes exists as a cause of retention: when such is the case, the warm bath, purgatives, opium, and chloroform are the remedial agents. Inflammation along the urethral canal (gonorrhœa) often has retention of urine as a complication. Here it is caused by an intensely congested and swollen mucous membrane, and the same treatment as for muscular spasm may be adopted.

Amongst the other mechanical causes, the most important one, a small calculus impacted in the urethra; clotted blood in the urethra or bladder; foreign bodies, as pieces of bougies, catheters, etc., in the urethra, tumours of any kind, external to the urethra, which press upon it: this last cause

operates quite frequently. The treatment should always be directed to the removal of the cause, and the case should be placed in skilful hands.

Paralysis of the bladder, causing retention, may be due to voluntary retention repeated and being kept up, apoplexy, injury to the skin, acute over-distention of the organ, shocks to the system from capital operations, and in certain high fevers, as typhoid, typhus, etc. The treatment in all these cases should be by the catheter.

Various cases are recorded in medical books, where, from a false modesty, persons have retained the urine so long, many hours together, that the ability to pass it was lost, and, not being aware of the danger, the patient failed to apply to a physician, when fever set in, then inflammation and speedy death. The pouring of water into water in the hearing of the patient, so as to resemble the natural operation, has been known to remove this dangerous inability. It would be well, at least, to try it. If this is done without the connivance of the patient, when the patient is alone, success will more likely attend the experiment. Parents cannot better employ their time, as far as the physical well-being of their children is concerned, than to impress on their minds, from the age of four years, the importance, and the danger of the neglect, of prompt attention to those urgent calls of nature.

Retina, Impressions of Light on.—*See* LIGHT ON RETINA, IMPRESSIONS OF.

Rheum, Salt.—*See* ECZEMA.

Rheumatic Fever (*Gr.* *rheuma*, a discharge; from *rheo*, I flow; *Fr.* *fièvre*; from *Lat.* *febris*, fever).—The type of what we call rheumatism is acute rheumatism, also known as rheumatic fever. Rheumatic fever most frequently arises from cold and damp, especially if the individual has suffered from any cause of depression, as fatigue, improper food, or the like.

Rheumatic Fever, Symptoms

of.—The disease begins with restlessness and fever, with white or creamy tongue, and deranged bowels, constipated or relaxed. Presently the joints begin to ache, the pain increases till there is great swelling and tenderness all over one or more of the large joints of the body; the hip-joint is not, however, very often affected. There is by this time, in most cases, a very high temperature, 102° or 103° Fahr., but it gradually increases, and in many cases becomes excessive: this, indeed, constitutes one of the great dangers of the disease. Excessive bodily heat is apt to develop itself, and when the temperature rises above 105° Fahr., there is always more or less danger to the patient, and every degree of increase adds to the danger in far more than geometrical progression; for, by the time it reaches 108° , recovery is, as nearly as possible, hopeless, and at 109° may be said to be quite so. In those cases, where a high temperature develops itself, the sweat, which is ordinarily very profuse and of a strong acid odour, disappears, and its reappearance may be said to be the first sign of real amendment.

The pain and tenderness in the joints, too, are very great. The patient can hardly bear the weight of the bed-clothes, still less can he bear the swollen limbs touched; he himself dare not move, and he even dreads the movement of others. The pulse is quick and of fair volume, and, except the heart be affected, it is regular. The thirst is extreme, whilst the tongue is coated with a thick white fur, which speedily renders the scanty saliva acid. The urine is high-coloured and full of urates—that is to say, it deposits, on cooling, a thick brick-dust-like sediment, which is re-dissolved on heating. It is difficult, too, to say when the patient has fairly seen the worst, for joint after joint may be affected, and even when the patient seems fairly on the road to recovery, he may suffer a relapse. There is a great tendency in the disease to implicate the heart.

Rheumatic Fever, Treatment of.—The mode of treatment which is, with

due modifications, perhaps the best, is the treatment by alkalies. To this end the bicarbonate of potass is given, either by itself or effervescing with citric acid, in good large doses—30 grains or so every four hours, continuing it till the pain begins to abate and the urine is rendered alkaline. This plan is a good one undoubtedly, if employed not rashly, but with due vigilance; but there are doubts that in certain cases it has been over-much employed, and has done harm. This, on the whole, is the plan we recommend. The joints ought, at the same time, to be wrapped in cotton wool, but in some cases great good is derived by applying warm alkaline lotions next the skin, and placing cotton wool over that. Then, too, the perspiration must be provided for—something must receive it, and if linen is next the skin, this soon becomes cold and unpleasant with the patient's profuse sweating. Woollen cloths should, therefore, be placed next the skin, but should not be allowed to remain too long, or they act as a kind of poultice, giving rise to what are called *sudamina* on the surface; hence there used to be a saying, that the cure for rheumatism was six weeks in blankets.

In the olden time, of course, bleeding was largely employed, and there can be no doubt but that its use was disastrous, for in those days the test of the necessity for bleeding was the condition of the blood itself, and rheumatic blood, of all others, affords the buffed and cupped appearance which was supposed to indicate the necessity for blood-letting.

A favourite plan of treatment, begun of late years, has been blistering. Large cantharides blisters have been placed round the limbs close to the affected joints, and allowed to remain there some hours; after these have been removed, large poultices are to be applied to favour the flow of fluid. Better, however, it would be to apply the blistering fluid with the poultices over that from the beginning, especially as this process is far less painful than the other. Dr. Herbert Davies, who introduced this plan, gave no medicine, but allowed the blisters

to suffice for everything. There can, however, we think, be no doubt that the addition of effervescing alkaline draughts is an improvement; this plan is mainly to be commended for the relief it gives to the pain in the joints.

Many doctors like to give large doses of quinine. Now it is well known that quinine does materially reduce temperature, and it will do so in rheumatism as in other maladies, but the disease is not thereby remedied; it pursues its course as before, and when the real time comes to use quinine with advantage, it has lost, by frequent repetition in large doses, its special virtues. By all means give quinine, but not till the pain has passed away and the temperature is nearly natural.

In a disease like rheumatic fever, where pain is one of the most prominent symptoms, it may readily be supposed that opium has been employed; nevertheless, for some reason or another, it is not usually had recourse to, there being an idea that its exhibition, though useful for the time being, would tend to prolong rather than shorten, the fever. This belief had its origin in the notion that the disease was due to some *materis morbi*, which had to be eliminated, a view which is most probably not the true one. At all events, the current of opinion seems to set against the use of opium, and in favour of other sedatives. Nitrate of potass has been used and commended by some authorities; it has been given both internally and externally—given, *ad libitum*, dissolved in water, internally to slake thirst, externally to cool the joints.

Lemon juice is another remedy which has not, like the last, received universal acceptance; it may, however, be useful, on account of the citric acid and potass which it contains.

The diet during the brunt of the malady should be light; slops are generally given, beef-tea, and the like. By-and-by, when the patient becomes stronger, fish may be given, but meat must be reserved until a later period; too early use of it may bring on a fresh attack. The patient should have

plenty of drink supplied to him by the nurse, he himself not being allowed to move. Lemonade made of lemons and water, with sugar, is best, or soda or potass water may be given; wine must, as a rule, be forbidden; so must, above all things, beer.

Rheumatic Fever, Treatment of, in Convalescence.—In convalescence, quinine or bark and ammonia, afterwards iron and cod-liver oil are to be prescribed.

Rheumatic Gout (*Fr. goutte*; from *Lat. gutta*, a drop).—Rheumatic gout, as the malady is commonly called, is a most anomalous disease. It certainly has nothing to do with gout, and nothing to do with rheumatism. The affection consists in an inflammation of the joints, chronic in character, and in some respects resembling gout, in others rheumatism; but, in all essential respects, totally distinct. The affection is a most troublesome one, and not unfrequently cripples the patient, whilst defying the practitioner's art. It is said that more women suffer from this affection than men, but this is doubtful. There is often no constitutional predisposition, hereditary or otherwise, except some cause of general weakness.

Rheumatic Gout, Symptoms of.—Rheumatic gout seizes on various joints—sometimes the large, sometimes the small; but the hip, shoulder, knees, elbows, ankles, and hands are its favourite sites. Often it occurs in females at the turn of life, or about puberty. When acute, the disease comes on abruptly, something like rheumatic fever; but more frequently it steals on gradually, the bowels being out of sorts, and the urine loaded and scanty; the joints become stiff and painful, and are more or less swollen. This gives rise to lameness, and the joints may be felt to crackle as they move, something like a door on ungreased hinges. As the disease advances, the stiffness grows greater and greater, whilst round about the joint are formed

great masses of imperfect bone, and the cartilage covering the joints becomes absorbed; the joints are thus greatly deformed. The functions of the constitution are badly performed, there is constant indigestion, the rest is disturbed, and the patient becomes painfully sensitive to the weather. No heart complication ever results from rheumatic gout.

Rheumatic Gout, Treatment of.

—The treatment is very unsatisfactory. The best thing, we believe, short of a visit to a foreign spa, is rest and cod-liver oil. The bowels must be kept open by saline aperients, and sulphur waters generally suit well. Arsenical baths have been highly commended, as have a hundred other substances. Iodide of potassium internally, and alkaline lotions, applied so as to act like poultices externally, sometimes do good, but must not be continued too long, for fear of impairing the constitution. So, too, any fixed appliance to the limb or joint may bring on fixation of the joint—an irreparable mischief.

Rheumatism, Liniment for.— See EMBROCATIONS.

Rhubarb, Medicinal.—See MEDICINES, HOME.

Rhubarb, Vegetable.—The agreeable taste and odour of rhubarb are not brought out till the leaf stalks are cooked. The chief nutriment in rhubarb is the sugar (glucose), which amounts to about two in one hundred parts of the fresh stalks. The sour taste of rhubarb is due to oxalic acid, or rather to the acid oxalate of potash; oxalate of lime is also present. There are some conditions of the human body (the oxalate-acid diathesis) in which it is probably wiser to avoid eating rhubarb and other plants, as sorrel, in which oxalic compounds predominate.

“The composition,” says Professor Church, “of the freshly cut leaf-stalks of

a red variety of rhubarb which has been grown in the open air, and were in good condition for use, is here shown:—

	In 100 parts.	oz.	In 1 lb. grs.
Water	95.1	15	94
Albumen	0.9	0	63
Sugar (glucose)			
and gum . . .	2.1	0	147
Oxalic acid. . .	0.3	0	21
Cellulose . . .	1.1	0	77
Mineral matter .	0.5	0	35

“As 1 lb. of rhubarb contains less than 1 oz. of solid matter, and as even of this solid matter more than one-quarter is not nutritive, it is obvious that the food value of this vegetable is very small.”

Ribs.—The ribs are the curved bones which enclose the chest and upper part of the abdomen. They are twelve in number on each side, and are attached by their heads to the spine and by their cartilaginous extremities to the *sternum*, or breast bone. The seven uppermost are called true ribs, because each of them is connected directly with the sternum by means of a separate cartilage. The five lower ribs are called false, because one or two of them are loose at one end, and the cartilages of the rest run into each other, instead of being separately prolonged to the breast bone. The use of the ribs is to form the cavity of the chest for the reception and protection of the lungs, heart, and great blood-vessels, and to assist in respiration by their alternate rising and falling. This action enlarges and diminishes by turns the size of the chest and the capacity of the lungs.

Rice.—Rice is in some features nutritious; yet it is not the best food, although millions subsist on it. It is deficient in important elements of nutrition. It is better adapted for warm than cold climates. In cold and temperate regions, and for hard workers with brain and muscle in any climate, it does not sufficiently exercise the stomach, nor warm the system, nor feed the brain or muscle. The addition of some

condiment, as cinnamon, nutmeg, allspice, and the like, makes rice more palatable, as well as more wholesome, and obviates its tendency to confine the bowels.

The most useful employment of rice as food, it is pointed out by Professor Church, is when it is consumed along with substances rich in nitrogenous, or flesh-forming, matters. It may thus be used with meat, eggs, and any kind of pulse, as peas or beans. Rice should not be boiled, as it yields to boiling water a considerable part of its nitrogenous and mineral constituents—just those compounds in which it is already deficient. It should be merely steamed till it is tender. This objection, however, to boiling rice does not, of course, apply to its employment in soups. Rice cannot for any length of time be substituted for green vegetables without an unhealthy state of the body, and sometimes scurvy, being the result.

The following is the analysis of cleaned rice :—

	In 100 parts.	oz.	In 1 lb. grs.
Water	14.5	2	146
Fibrin, etc. . . .	7.6	1	87
Starch, etc. . . .	76.0	12	72
Fat	0.5	0	35
Cellulose. . . .	0.8	0	62
Mineral matter . . .	0.4	0	36

When rice is used as a principal article of food, it is more wholesome to eat it with salt than with sweets; and the addition of a little pepper is perhaps useful. There is, however, no objection to eating it occasionally with sugar or treacle, or with dressed fruit, such as gooseberries and currants, and apples when they are in season. There formerly existed a prejudice against the use of rice, from a belief that it had a tendency to produce blindness. It is scarcely necessary to state that such an idea has no foundation in truth.

Rice was held in great esteem by the ancients: they considered it as a very beneficial food for the chest; therefore it was recommended in cases of consumption, and to persons subject to spitting of blood.

Rice and Apples.—Take a sufficient quantity of rice, and boil it rapidly in hot water, then strain through a cullender; expose for a quarter of an hour before the fire, and having stewed separately the requisite number of apples, mix them together with a moderate quantity of sugar.

This forms a nice dish for those recovering from acute disease.

Rice and Gravy.—Let the gravy from a leg of roast mutton or a sirloin of beef stand till a cake of fat forms upon the surface. Remove this, and stir a sufficient quantity of well-boiled rice into it to constitute a meal.

Rickets.—See RACHITIS.

Riding.—Riding on horseback has been justly celebrated as a very useful sort of exercise, more especially to invalids. In general it may be laid down as a rule, sanctioned by experience, that riding is the best exercise for regaining health, and walking for retaining it. Riding certainly strengthens in a most effectual manner the stomach and intestines; and to the hypochondriac and those whose spirits are broken down by grief, it is an inestimable remedy. It is less tiresome and laborious to the lower limbs than walking, so that persons in a weak state of health can use it with less pain or difficulty; at the same time it must be admitted that the legs and feet are apt to get stiff and cold by riding unless some exercise on foot be afterwards taken, which should always be done when practicable.

Right Amount of Exercise.—
See EXERCISE, RIGHT AMOUNT OF.

Right Hand or Left?—There is a universal consent among all nations to give the preference to the right hand over the left. The question has been frequently discussed whether this preference is the result of education or is given us by nature. "That the preference for the right hand," says Sir Charles Bell, "is not the result of

education, we may learn from those who by constitution have a superiority in the left. They have a difficulty in accommodating themselves to the mode of society; and although not only the precepts of parents but everything they see and handle conduces to make them choose the right hand, yet they will rather use the left.

"It must be observed, at the same time, that there is a distinction in the whole right side of the body as well as in the arm; and that the left side is not only the weaker in regard to muscular strength, but also in its vital and constitutional properties. The development of the organs of action and motion is greatest upon the right side, as may at any time be ascertained by measurement or the testimony of the tailor or shoemaker. Certainly, this superiority may be said to result from the more frequent exertion of this side; but the peculiarity extends to the constitution also, and disease attacks the left extremities more frequently than the right. . . . We think we may conclude that the adaptation of the form of everything in the conveniences of life to the right hand, as, for example, the direction of the worm of the screw or of the cutting end of the auger, or the shape of other tools or instruments, is not arbitrary, but is related to a natural endowment of the body. He who is left-handed is most sensible to the advantages of this adaptation, whether in opening the parlour door or in opening a penknife. On the whole, the preference of the right hand is not the effect of habit, but is a natural provision, and is bestowed for a every obvious purpose."

Right Hand, Sensitiveness of.

—Curiously enough, the right hand, which is more sensitive to touch than the left, is less sensitive to temperature. If the two hands be dipped in two basins of water at the same temperature, the left hand will feel the greater sensation of warmth; nay, it will do this even when thermometers show that the water in the left basin is really somewhat colder than that in the right

basin. Probably with left-handed persons the reverse would be found to be the case.

Right Time for Exercise.—*See* EXERCISE, RIGHT TIME FOR.

Rigor Mortis (*Lat.* rigor, stiffness; mors, mortis, death).—A term applied to the stiffening or rigidity of the muscles which sets in after death.—*See* MUSCLES, CONDITION OF, IN LIFE AND DEATH.

Rings, Tight.—*See* TIGHT RINGS.

Ringworm.—*See* TINEA.

Rising, Early.—*See* EARLY RISING.

River Water.—This water contains less saline matter than spring water, but it also contains various organic impurities, according to the district through which it passes. Near large towns it may contain a good deal of sewage, or refuse from manufactories. It contains also fish-spawn, leaves, silt or mud, according to the rapidity of the current. Before, therefore, it can be used for drinking purposes, it must be filtered through beds of sand, gravel, etc., so as to remove the impurities. Any running stream has a self-purifying power, because it continually exposes fresh portions of the water to the air, and so the organic matters get oxidized. It is thus very important that, for the due supply of a large town, there should be a rapid current, absence of sewage matter from the towns above, and proper filtration, so as to separate inorganic impurities. River and rain water are ordinarily known as *soft* waters, because they contain little or no lime; hence they are more useful for washing and other domestic purposes.

Roasting (*Old Fr.* *rostit*, to roast; *Ger.* *rosten*, to broil; from *rost*, grid-iron).—Generally speaking, the most wholesome form of cooking is roasting, by which process a crust is formed on the surface, which preserves the internal part from too sudden or violent a degree of heat, and also

prevents the draining away of its juices. The internal part of the joint is best for invalids, as it is not only more juicy, but is lighter and of simpler and more delicate flavour, and, consequently, of more easy digestion. The surface, which consists chiefly of burnt fat, is apt to disagree with weak or delicate stomachs.

In roasting meat, the heat should be greatest at first, so as to coagulate the albumen on the surface, and prevent the juice from flowing out.

Roasting was certainly the first mode invented to prepare animal food; for boiling is a more complicated process, and required the art of manufacturing vessels that could withstand the effect of heat.

It is important to observe, that unless meat be kept after it is killed till the fibres begin to lose their firmness and tension, it will not become tender by roasting. The perfection of roasting consists in doing the meat neither too slowly, so as to wither it, nor too rapidly, so as to burn it.

Robertson on Muscular Exercise.—See MUSCULAR EXERCISE, ROBERTSON ON.

Robinson on Dancing.—See DANCING, ROBINSON ON.

Roche's Embrocation.—See EMBROCATIONS.

Roe (*Ger. Rogen; Dutch, roghe*, eggs of fish).—Roe is the eggs, or spawn, of fish. The roes of male fish are styled soft roes or melts; those of females hard roes or spawn. Their size is various in different fish. When pickled, they form a peculiar delicacy.—See CAVIARE.

Roof of Mouth.—See PALATE.

Room, Change of Air in.—See AIR IN ROOM, CHANGE OF.

Room, Ventilation of.—If the doctor permit, the window farthest from the bed can be kept constantly down an inch at

the top, the window blinds, the shutters, or even a screen being so arranged that there shall be no direct draught on the patient. Stand a lighted lamp in the open fire-place, or light a fire there, which will create more draught and accelerate the entrance of air through the window, the action of the fire drawing the foul air up the chimney while the fresh air from the window takes its place. If it is impossible to have a fire burning constantly, a few sticks lighted several times a day and the lamp kept burning in the chimney at all other times will answer.

Rooms, Purification of.—See PURIFICATION OF ROOMS.

Roots.—A principal division of vegetables, after the farinaceous seeds, is into the esculent roots, as they are commonly used at table; and they differ from being either of a mild, insipid nature, or of an astringent, acrid kind. The former are purely nourishing, the latter possess something of a medicinal virtue, or, at least, are strongly stimulant. Roots are neither so nourishing as the grains nor so easily digested as animal food. They contain, however, a greater quantity of alimentary matter than the leaves of the plants to which they belong, and from a number of them, by means of a particular preparation, a considerable quantity of farinaceous product can be procured.

But it is chiefly in the state in which nature presents them that we are to consider them here; and in this state they are for the most part agreeable to the palate, so that we feel for them a natural and permanent appetite—a proof that they are intended for our food and conformable to our nature.

Rosemary.—This plant is not much used now-a-days, but sprigs of it used to be stuck into beef whilst roasting, and were said to give it an “excellent relish.” It is now chiefly used in making an infusion which affords a cleansing wash for the hair, useful and beneficial at all times, but especially in cases of scurf or dandriff.

Roughing it.—Whenever one accustomed to the luxuries of city life tries “roughing it,” there is always danger from exposure and hardships. “Roughing it,” properly set about, has in it the promise of renewed life and vigour—yea, even of renewed youth; but it has also the seeds of death for those who, through ignorance, carelessness, or recklessness, neglect the dictates of that sound reason commonly called common sense. In “roughing it,” whether we tramp as pedestrians through our native land, or paddle our canoe over foreign waters, everything should be done in moderation. In all undue exposure there is a possible cause of nerve trouble which ought to be carefully guarded against.

Rubbing, or Massage.—When friction is needed to excite circulation of the blood, brisk rubbing up and down with the bare hand or hair glove, all over the surface of the body, will answer. The best time for this is before dressing, in the morning, after the patient's bath.

Where there is stiffness, or inaction of the muscles, from any cause, the entire body should be treated by pinching and rubbing the muscles and tendons, done with the whole hand, and not the fingers alone; each joint also should be worked up and down, and backward and forward, evenly and without jerks, commencing at the toe, and going upwards—a sort of kneading of the entire body, sometimes called massage. Cocoa oil or butter is frequently rubbed in at the time.

Where there is a restless nervousness or fatigue to be overcome, the rubbing should be in one direction, in long, slow, firm strokes, beginning with the shoulders and arms, then the back, abdomen, thighs, legs, and feet, with an equable, monotonous movement, which soothes and induces sleep.

For all kinds of rubbing, half an hour at a time is enough. The patient's arms being slipped out of the sleeves, the rubber should sit by the bedside and pass her hand under the bedclothes, without exposing the patient in any way.

Rules for Clothing.—See CLOTHING, RULES FOR.

Rules for Walking.—See WALKING, RULES FOR.

Rum.—This is a spirituous liquor distilled from molasses. It is largely produced on the sugar plantations in the West Indies, that of Jamaica being considered the best. The peculiar flavour of rum is chiefly due to butyric ether produced during the fermentation—acetic and other ethers are also present. Rum is greatly improved by age. Great quantities of rum are produced by flavouring and colouring rectified proof spirit. White rum is the pure distilled spirit, but ordinary Jamaica rum has been coloured with caramel.

Professor Church says that “a genuine sample of rum from the West Indies was found to contain 36½ grs. of solid residue per pint, 18 grs. being sugar and 1½ grs. being mineral matter. The chief natural flavouring material of rum is butyric ether, but this spirit sometimes receives in addition the flavour of the pine-apple.”

Running.—Speaking of this accelerated motion, Professor W. Turner says:—“The act of running consists in a repetition of the movements of walking performed with so much greater rapidity that the feet never touch the ground at the same moment; the heels also are never brought to the ground. The propulsive action is also greatly increased by the extension of the hip and knee joints, so that a succession of small leaps on to alternate feet takes place.”

Rye.—This is a valuable grain for persons predisposed to constipation, and, with corn meal, makes a nourishing and digestible bread. Rye-bread is dark in colour, heavy, and sourish, but it keeps moist for a long time. In many parts of Northern Europe it is a favourite food, being known as black bread. A palatable bread may be made from a mixture of two parts of wheaten flour and one part of rye flour. Rye grain

is unfortunately liable to the attacks of a fungus, which produces the ergot of rye. The whole substance of the grain is altered and blackened, and a remarkable compound is produced, called *ergotine*. This compound renders ergoted grain unwholesome, and sometimes even dangerous. The composition of rye grain is as follows:—

	In 100 parts.	In 1 lb.	
		oz.	grs.
Water	13.0	2	35
Fibrin, etc.	10.5	1	298
Starch, etc.	71.0	11	157
Fat	1.6	0	66
Cellulose	2.3	0	161
Mineral matter	1.6	0	112

Sacrum, or Os Sacrum (*Lat. os, bone; sacrum, sacred*).—A large vertebra of the spinal column, situated between the lumbar vertebræ and the final section of four small bones, to which the name of *coccyx* is given.—See VERTEBRÆ.

Sage.—This was originally a native of the South of Europe, but it has long been cultivated in the English garden. There are several kinds of it, known as the green, the red, the small-leaved, and the broad-leaved balsamic. In cooking, its principal use is for stuffings and sauces, for which purpose the red is the most agreeable, and the green the next. The others are used for medicinal purposes.

The leaves of sage and thyme are used fresh or dry, and constitute the flavouring of those ingredients which are placed in the inside of geese, ducks, roast pigs, sausages, and other animal foods brought to the table. "They are," says an old writer, "warm and discutive, and good against crudities of the stomach."

Sago (*Malayan sago, bread*).—There are several alimENTS in domestic use which owe their qualities to starch, such as sago, tapioca, arrowroot, etc. From the mucilaginous form in which they are usually administered to invalids, they are not so digestible as is generally supposed; but

where the stomach rejects more substantial viands, they are useful in themselves, as well as proper vehicles for the administration of vinous stimulants.

The farinaceous food known as sago constitutes the pith of the sago tree (the *Sagus farinifera* of Linnæus), which grows spontaneously in the East Indies and in the Archipelago of the Indian Ocean. There it forms the principal farinaceous diet of the inhabitants. In order to procure it, the tree is felled and sawn in pieces. The pith is then taken out and put in receptacles of cold water, where it is stirred until the flour separates from the filaments, and sinks to the bottom, where it is suffered to remain until the water is poured off, when it is taken out and spread on wicker frames to dry. To give it the round granular form in which we find it come to this country, it is passed through a colander, then rubbed into little balls, and dried.

Sago Milk.—Soak an ounce of sago in a pint of water for an hour, after which pour the water off and add a pint and a half of milk; boil slowly until the sago is well incorporated with the milk.

Sago Posset.—Take two tablespoonfuls of sago, and put them into a pint of water; boil till a mucilage is formed. Now take the rind of a lemon, and rub a quarter of an ounce of loaf sugar on it, and put it with half a teaspoonful of tincture of ginger, into five ounces of sherry wine; add this mixture to the sago mucilage, and boil for five minutes. A wineglassful of this may be taken at a time. It is an excellent preparation in great debility resulting from acute diseases of a non-inflammatory nature.

Sago, To Make.—Take a tablespoonful of sago, and macerate it in a pint of water, on the hob, or a hot plate, for two hours, and then boil for fifteen minutes, stirring constantly. It may be sweetened with sugar, and lemon-juice added, as in the case of arrowroot. Instead of water, milk may be used. Sago has little nutritive

value. It is frequently employed where a non-stimulating diet is necessary.

Sailor's Dietaries.—See PUBLIC DIETARIES.

Sailors, Ills of.—The ill's of sailors are, to a very great extent, caused by want of fresh air, dirt, and dampness. It is commonly forgotten that, by washing down the deck frequently, a source of disease is introduced which is at least as dangerous, and in feverish localities ten times more dangerous, than simple dry dirt. Good ventilation and scrubbing and *drying* are the cure for the chief of the curable ill's of ship-life.

St. Anthony's Fire.—See ERYSIPELAS.

Salads.—Generally speaking, salad plants contain but little nourishing food of the heat-giving and flesh-forming kinds. They are valuable, however, from their being comparatively rich in saline matters, especially in potash salts, which are usually extracted from cooked vegetables in the course of boiling. They also serve to introduce large quantities of water into the system, and are delightful additions to richer foods, especially in summer, when their crisp coolness is particularly acceptable. Too much care cannot be taken in cleaning salad plants for the table—especially water-cresses—with which many internal parasitic or entozoal animals are frequently introduced into the human system.

Lettuces, water-cresses, ondiver, celery, beet-root, radishes, corn salads, sorrel, and even dandelion are valuable and pleasant as ingredients in a salad, and there are many other plants which might be eaten with advantage were it not for English prejudice.

Salep (*Turk. sallah*).—This is a preparation of the root of the orchis, which grows plentifully in Turkey and Persia: it does not differ from the root grown in this country, except in size. The preparation consists of a sweetish, mucilaginous, and

highly nutritive powder. Thrown into water, it melts into a mucilage of a smooth taste, somewhat sweet; both its taste and mucilage clearly show it to be a farinaceous matter, and it is liable also to the same inconveniences as other farinaceous matter, acescency and fermentation. By proper management it converts a large portion of water into jelly, and it is extremely convenient for making quickly a mucilaginous drink. Hence it is a useful article of diet for the sick and invalids, and particularly in cases of acrimony, either in the general habit, as in hectic fever, or consumption; or in particular secretions, as in affections of the urinary passages, as inflammation, stone, or gravel; and also in affections of the bowels, as looseness and dysentery. Though thus exceedingly demulcent, the exact degree of its nourishing quality has not been ascertained.

Saline Draught.—See DRAUGHTS.

Saliva, Influence of, in Digestive Process (*Lat. saliva, spittle*).—This formed the subject of a series of experiments by Dr. Wright, of Birmingham. From these experiments Dr. Wright formed the following conclusions:—

1. "That saliva has the power of modifying, and to a great extent of digesting, vegetable and animal substances.
2. "That it has a more powerful action upon vegetable than upon animal matters.
3. "That acids or alkalies, added to saliva, diminish or destroy its digestive properties.
4. "That the presence of saliva in the stomach is essential to healthy digestion."

Saliva, Secretion of, Checked by Emotion.—The secretion of saliva is diminished under the influence of painful emotion, and Dr. Spencer Thomson has related how this fact is practically acted upon in some Eastern countries as a means of detecting crime: "If a crime," he says, "such as a theft, is committed, and a number of persons, such as a staff of servants, are generally suspected, the whole of the

suspected are placed together, and caused to chew and then spit out a handful of rice, in the presence of the examiner. It is said that such is the feeling in these countries with regard to the test, that the fear of the real criminal diminishes the secretion of his saliva to so great an extent that the portion of rice chewed by him remains comparatively unmoistened."

Salivary Glands.—Of these there are three pairs, which are called salivary glands because they secrete the saliva. The principal of these are the *parotid glands*, situated, one on each side, immediately at the back of the angle of the lower jaw, between that and the ear. They open by a duct upon the inner surface of the cheek, and furnish the principal amount of the saliva which serves to moisten the food while undergoing the process of mastication or chewing. These glands are the seat of the *mumps*. The next pair are the *sub-maxillary*—situated under each angle of the jaw, and opening by a duct into the mouth, on each side of what is called the frenum, or bridle of the tongue. The other pair are the *sublingual glands*, so called because situated under the tongue, near its back part. They have several ducts by which their secretion is poured into the mouth.

Salivation in Pregnancy (*Lat. saliva, spittle*).—The discharge of a large quantity of saliva from the mouth is an occasional accompaniment of pregnancy. It is most generally met with during the early months, but is not confined to those.

The quantity discharged varies, in some cases amounting to pints or even quarts in a single day. As mercury gives rise to a profuse discharge from the salivary glands, it may be as well to distinguish between the two. That due to the administration of a mercurial is accompanied by tenderness of the gums and a peculiar fœtor of the breath. These are both absent in that form of salivation which occurs during pregnancy. The gums remain perfectly normal, and the breath has no fœtor. Frequently this ex-

cessive flow of saliva is attended by acidity of the stomach.

Salivation, Treatment of.—Various forms of treatment are had recourse to, many of which, however, prove futile in checking it. Astringent gargles may be tried, such as those which contain tannin. Glycerine of borax and rose-water mixed together form a useful preparation. Ices given to suck may also be tried, and so may counter-irritation by means of tincture of iodine over the glands. If the patient suffers from acidity, fifteen grains of bismuth or magnesia may be taken three times a day. Should the discharge be excessive, and the patient's health be suffering in consequence, medical advice should be sought without further delay.

Salmon (*Lat. sal'mo, salmo'nis*; from *salio*, I spawn).—This may, perhaps, be considered the most nutritive of our fish; but it is heating and oily, and not very digestible; and persons, even with strong stomachs, are frequently under the necessity of taking some stimulant to assist its digestion. The addition of lobster sauce renders it still more unwholesome to those whose digestion is weak. The best condiment that can be used is vinegar. As connected with the time of spawning, the season of the year has the most decided influence upon the quality of salmon. It is in the highest perfection, or *in season*, as it is termed, some time previous to its spawning; the flesh is then firm and delicious; whereas, after this event, it is for some time unfit for food.

Salmon-trout.—Salmon-trout is not so rich and oily as the salmon. Although, therefore, it is less nutritive, it is at the same time less heating and more digestible.

Salt (*Lat. sal, salt*).—Common salt, by its stimulant action on the throat, gullet, and stomach, promotes the secretion of saliva and of the gastric juice, and thereby facilitates digestion. It is a natural and

necessary stimulant to the digestive functions, and its daily use seems to conduce much to the preservation of health and strength. It is not generally taken so freely as it ought to be by infants and children.

It might almost be considered as a proof of its necessity, that salt is universally employed by almost the entire human race, whether civilized or uncivilized, and in whatever climate man may exist. A merely temporary privation from it is almost intolerable; and even ashes are had recourse to, with the hope of obtaining some saline substance. Amongst the abuses which existed in France prior to the Revolution of 1789, there was probably none more sensibly felt than the monopolies of salt, which raised to a distressing price this essential article, with which none could dispense. In some countries in which salt, notwithstanding its general abundance, happens to be extremely scarce, it is eagerly sought, notwithstanding the heavy expense of its conveyance; and portions of it are employed as a medium of exchange, scarcely less important than gold itself. The necessity for salt is shown, not only by its general employment, and the pains which are taken to surmount difficulties in obtaining it, but by the injury which the health sustains from the privation of it. It once constituted a part of the punishment of certain prisoners in Holland wholly to deprive them of the use of salt; and this abstinence was found not only painfully disagreeable, but a source of serious derangement to the health. "The effect," says Lord Somerville, "was horrible: these wretched criminals are said to have been devoured by worms engendered in their own stomachs."

Some persons have been known, through a strange peculiarity of taste, to have so great an aversion to salt as wholly to reject the use of it. Ill health was the consequence, which the use of salt speedily removed. It would seem that salt is particularly required when the diet is wholly or principally vegetable; and nature has implanted so strong a desire for it in those animals which feed wholly on vegetable matter, that salt

springs are eagerly sought after by them when they have liberty to do so.

Common salt is found in great abundance both on land and in the waters of the ocean. Sea or salt water, as it is often called, contains, it has been discovered, about 3 per cent. of salt on an average. Solid rocks of salt are also found in various parts of the world, and the county of Chester contains many of these mines, and it is from thence that much of our salt comes. Some springs are so highly impregnated with salt as to have received the name of "brine" springs, and are supposed to have become so by passing through the salt rocks below ground, and thus dissolving a portion of this mineral substance. In many parts of Cheshire, as said above, and especially at Northwich, both salt mines and brine springs are exceedingly productive, and those at Northwich are believed to have been wrought so far back as during the occupation of Britain by the Romans.

Salt, Action of, on Meat.—The manner in which salt acts in preserving meat is not difficult to understand. By its strong affinity it, in the first place, extracts the juices from the substance of meat in sufficient quantity to form a saturated solution with the water contained in the juice, and the meat then absorbs the saturated brine in place of the juice extracted by the salt. In this way, matter incapable of putrefaction takes the place of that portion in the meat which is most perishable. Such, however, is not the only office of salt as a means of preserving meat; it acts also by its astringency in contracting the fibres of the muscles, and so excludes the action of air on the interior of the substance of the meat. The last-mentioned operation of salt as an antiseptic is evinced by the diminution of the volume of meat to which it is applied. The astringent action of *salt-petre* on meat is much greater than that of salt, and thereby renders meat to which it is applied very hard; but, in small quantities, it considerably assists the antiseptic action of salt, and also prevents the de-

struction of the florid colour of meat, which is caused by the application of salt. Thus, it will be perceived from the foregoing statement, that the application of salt and saltpetre diminishes, in a considerable degree, the nutritive and, to some extent, the wholesome qualities of meat; and, therefore, in their use, the quantity applied should be as small as possible, consistent with the perfect preservation of the meat.

Salt Enema.—See ENEMA.

Salt Rheum.—See ECZEMA.

Salted Fish.—The objections which are urged against salted meats apply to salted fish; they are, however, rendered less injurious by a plentiful admixture of potatoes. Indeed, this esculent root, with, perhaps, the exception of parsnip, is the only vegetable that should accompany a meal of any species of fish; and it will be well for the invalid to abstain, on such occasions, from fruit. Cullen says that, by way of experiment, he has taken apples after fish; but he always found that his digestion was disturbed by them. Milk may be considered as another incompatible aliment: such a mixture has been followed by the most serious diarrhoea.

Salted Meat.—See CORNED MEAT.

Salting, or Curing of Food.—This is confined chiefly to animal food, and is managed by the application to it of three substances—sea salt, nitre, and sugar, in various proportions. For this purpose this combination requires to be applied to animal substances in large proportions, so that they may be incorporated with it, and the combination not washed out before the animal food is used.

The most proper kinds of animal food for being salted are those that possess a large proportion of oil or fat in their composition; and, before being used in their salted state, pressure should be applied to them, so as to separate a part of the impregnation they have received, and to blend more intimately

the oily and lean parts of their texture together.

Samphire (a corruption from *Fr. Saint Pierre*, St. Peter, this being known as St. Peter's herb).—This plant is gathered for the sake of the pleasant oil which is diffused throughout the whole plant, and which renders it an agreeable addition to our food, especially when used in the form of pickles. It grows on the cliffs in many parts of the British Isles.

Sanguine, The (*Lat. sanguis, sanguinis*, blood).—The characteristics of the sanguine temperament are caused by a great vivacity of circulation. The complexion is fair and bright coloured; the eyes blue; the hair bright, with a tendency to red; the air animated; the disposition quick and unstable; the pulse full and quick.

Sanitary Acts, Provisions of (*Lat. sani'tas*, health; from *sa'nus*, sound, healthy).—So great is the importance of purity of air that provision has been made by law to secure it as far as possible. The Public Health Act, 1875, in which were consolidated all the various sanitary Acts passed by Parliament since 1848, including the Public Health Act of that year, provides effectually for the removal of nuisances which tend to pollute the atmosphere. Under this Act a nuisance is declared to be—

(a) Any premises in such a state as to be dangerous or injurious to health;

(b) Any pool, ditch, gutter, water-course, privy, urinal, cesspool, drain, ash-pit, so foul or in such a state as to be a nuisance or injurious to public health;

(c) Any animal so kept as to be a nuisance or injurious to health;

(d) Any accumulation or deposit which is a nuisance or injurious to health;

(e) Any house, or part of a house so overcrowded as to be dangerous or injurious to the health of the inmates, whether or not members of the same family;

(f) Any factory, workshop, or workplace

(not already under the operation of any general Act for the regulation of factories or bakehouses) not kept in a cleanly state, or not ventilated in such a manner as to render harmless, as far as practicable, any gases, vapours, dust, or other impurities generated in the course of the work carried on therein, that are a nuisance or injurious to health, or so overcrowded while work is carried on as to be dangerous or injurious to the health of those employed therein;

(g) Any fire-place or furnace which does not as far as practicable consume the smoke arising from the combustibles used therein, and which is used for working engines by steam, or in any mill, factory, dye-house, brewery, bakehouse, or gaswork, or in any manufacturing or trade process whatsoever; and

(h) Any chimney (not being the chimney of a private dwelling-house) sending forth black smoke in such quantity as to be a nuisance.

Overcrowding also, as it is liable to appear in common or other lodging-houses, receives special attention in the Act, and provision to meet this evil is also made in the Common Lodging-house Acts. Sometimes a difficulty is experienced in connection with offensive accumulations for trade purposes; these accumulations, however, are exempt from the provisions of the Act, provided they are not unduly kept, and if all reasonable care is taken to obviate annoyance from them. The other provisions of the Act we need not enter upon: we have said enough to show that all possible care has been taken to secure pure air to the community, and to banish all that would prove obnoxious to health.

Sanitary Record Book.—A sanitary record book, it is suggested by Professor Fonssagrives, in his "Mother's Work with Sick Children," should be kept by every mother for each of her children. In this book he proposes she should enter, in a methodical manner, a few notes from time to time having reference to the natural processes of growth and dentition, how they

have been accomplished, and the diseases which the child has passed through. Prof. Fonssagrives shows the value of this in after-life to physician and patient alike, and the good that would be likely to result from it. Of course, were such a plan adopted by any parent, it would require to be systematically gone about and regularly attended to, to be of any practical value when the child had attained to maturer years. This habit of carefully recording a few facts from time to time would also lead to habits of closer observation on the part of the mother, and as the time that would be occupied in so doing would be infinitesimal when extended over a number of years, the want of time cannot be urged as an excuse. The plan which Professor Fonssagrives recommends is simple and natural, and for the sake of those who may wish to adopt it a translation is here appended:

1. Date of birth.

2. The mode of lactation, and the particular circumstances which influenced it.

3. The diseases of lactation, with their dates, their duration, some indication of their severity, and the measures successfully employed against them.

4. The first dentition. The time of appearance of incisors, of the eye-teeth, of the first large teeth, the various accidents of dentition (convulsions, diarrhoea, different ophthalmic affections), the date of the appearance of the twentieth tooth.

5. The date of weaning, the ease with which it was accomplished, or the accidents with which it was complicated (diarrhoea, loss of flesh, marasmus).

6. Walking—at what age did it become possible? Was it advanced, retarded, or interrupted?

7. Vaccination—at what age, and under what circumstances? Were the pocks regular in their progress?

8. The intermediary dentition, or eruption of the flesh molars. The concomitant incidents.

9. The second (or seventh year) dentition. The peculiarities which it presented.

10. The eruptive fevers (measles, scarlet fever, chicken-pox), etc.

11. Growth. Measure every three months, and note the manner in which it is done. Precocious, tardy, or irregular growth. Accidents connected with growth.

12. Accidental diseases, ordinary attacks of indisposition, etc., etc.

Such a plan as the foregoing, if carefully and regularly executed, could not fail to be of use in the treatment of the diseases of adults, and the light thus thrown upon the previous history of the individual would be of the most valuable kind. Of course, in any such system of note-taking only facts should be recorded, and these expressed as briefly as is consistent with thoroughness in their execution.

Sarsaparilla, Compound Decoction of.—See DECOCTIONS.

Sartorius Muscle.—See MUSCLES, THEIR USES AND ACTION.

Saturnine Ointment.—See OINTMENTS.

Sausage (*Fr.* saucisse; from *Lat.* salus, salted; from *salio*, I make salt; from *sal*, salt).—Sausages consist of various kinds of meats, highly seasoned, and reduced by triture or beating to a very minute state, being enclosed in a skin or covering made of the intestines of animals. This affords a strong stimulant nourishment, and requires active powers of the stomach for its digestion. The sausages of Bologna and Venice, in which the meat is introduced in a raw state, are esteemed the best.

Savory.—There are two kinds of savory: summer savory, a most aromatic annual plant, belonging to Southern Europe, and an evergreen, *Satureja hortensis*. Both admit of being dried, and are employed for seasoning and sauces.

Scabies (*Lat.* scabies).—Scabies, or the itch, formerly called the “seven years’ itch,” because, until our microscopes re-

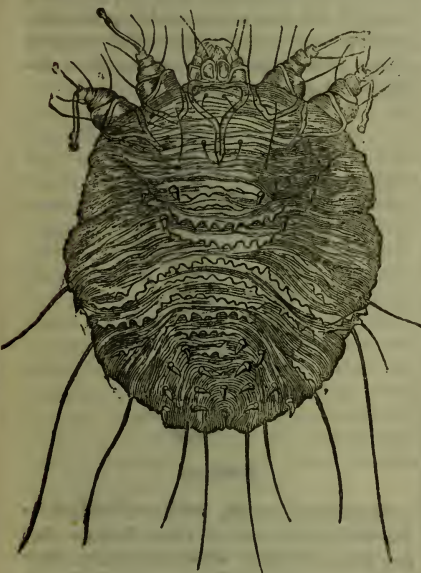
vealed its cause in the tiny *Acarus Scabiei*, it was so hard to cure, is a not uncommon parasitic complaint, and very easily transferred to a healthy person who happens to touch a diseased one, especially at night. A case is on record in which a whole family were infected from a monthly nurse, who had the disease in its usual seat between the roots of the fingers on the back of the hand; so that if it were possible to do so, which it is not, it would be desirable to look carefully for little inflamed pimples in these positions before shaking hands with strangers, and to give a glance at the fingers of nurses who have charge of children in whom you are interested. A single female itch-insect, although it is only about as big as a grain of writing-sand, will quickly burrow its way into the skin, lay its eggs, and rear a family of tens of thousands in a few weeks, which quickly overrun their territory, and drive their new landlord almost to distraction if unmolested by medical treatment.

Scabies, Cause of.—This disease, which is popularly known as *the itch*, is unfortunately by no means uncommon in some parts of this country. It is always acquired by contagion, and for this reason cases seldom appear alone; others associated with the patient will very likely be affected. It is always caused by the presence, on or under the skin, of a minute animal parasite, the *acarus* or *sarcoptes scabiei*, represented well in the accompanying illustration. This insect is exceedingly minute, and is only just visible to the naked eye, appearing as a minute white speck if placed on a black background. The female causes the damage, as she bores into the skin to a slight distance for the purpose of laying her eggs. The track which she makes may often be observed as a small black curved line, somewhat dotted in character, and appearing as if a bit of fine sewing-silk had been run beneath the skin for a distance of a quarter of an inch or so. The eggs are deposited in this, and the female dies in the burrow. The male is not known to burrow.

The actual appearances produced on the

skin in scabies vary greatly. Sometimes there is only moderate itching, with little to be seen. Sometimes there are masses of papules or pustules, and the sufferer tears the skin greatly. The most common places for the eruption is between the fingers and toes; also on the wrists and about the soft parts of the feet, especially in children.

Scabies, Treatment of.—The cure for scabies consists in the destruction of the



BACK VIEW, FEMALE ACARUS SCABIEI.
(Greatly magnified.)

insects whose presence in the skin causes the irritation. Internal medication, therefore, cannot remove the disease, though it may be required in particular patients to restore the lowered health which makes this disease possible. The main reliance is on the external use of sulphur, principally in the form of ointment. Sometimes this itself causes much irritation; the management of the disease should always be conducted with care.

Scalds—By “scalds,” we mean injuries inflicted on the living body by heated water, oil, spirits, or other matter, which, at the usual temperature of the atmosphere, exists in a fluid state. This term, therefore, you perceive, is applicable to injuries from steam or vapour, as well as fluids. By the term *burn* we shall designate all injuries sustained by the living body from any inflammable substance in a state of ignition, as from burning coal, or burning oil, or ignited fire-damp or other gas: also from heated substances not in a state of ignition, which at the ordinary temperature of the atmosphere are in a solid form, as heated stones, metals, glass, etc., whether these substances be in a state of fusion or in their natural state of solidity.

It is not necessary that the water or other fluid should be at the boiling temperature to produce the injury denominated scald, for water at two hundred degrees of heat, or considerably lower, will produce the mischief if applied to a very sensitive part of the skin, and retained some time in contact; whereas the boiling heat of water is two hundred and twelve. Generally speaking, the hotter the water, the severer will be the injury sustained; or, to speak more correctly, the mischief will be in proportion to the degree of heat, the length of time during which it is applied, the extent of surface, and sensibility of the part.

A scald may be so slight as to occasion only a little pain and redness, and these effects may speedily pass away. In such, and even severer cases, where the cuticle or scarf-skin is not raised into a blister, or the true skin injured, the application of cold relieves the smarting, and the immersion of the part in cold water, or its free application by sponge or wet cloths, is all that will be required.

Scalds, Treatment of.—The effects of a scald somewhat more severe, but still moderate, are greater pain, more lasting redness, and the rising, in a few minutes, of a bleb, or blister. Such often arises from hot water, perhaps below the boiling point,

being accidentally poured over a foot or leg, or some other part. In these cases, cold again is the chief remedy. Immerse the limb in cold water, apply ice to the part, if at hand, or cloths constantly kept wet with cold water, to which, if the skin be not abraded, some neutral salt may be added to increase the degree of cold, as common salt, or salt-petre, or sal ammoniac; or with a view of producing a far colder fluid, add to the water, from time to time, a small quantity of the combination of salts called the freezing powder. Some persons prefer wetting the scalded part with spirits of wine, and this, evaporating more speedily than water, produces more cold, and is, therefore, an excellent remedy, when the skin is not already denuded, and where expense is not an object.

In some cases the application of cold is more conveniently effected by means of poultices, or cataplasms; in which case, nothing answers better than scraped potato or carrot. Such poultices must be renewed as often as the burning pain, which the application of them instantly relieves, shall have returned. Of this, therefore, the patient will be the best judge, and his feelings must direct the mode of treatment; or, if the removal of the poultice and consequent exposure to the air aggravate the smarting, it may be kept cold by frequent application of cold water, without removal. The same observation as to the feelings of the patient applies also to the renewal of cold water, or wet cloths, used in the ordinary way.

Scalp, Human, Number of Hairs on.—See HAIRS, SHEDDING OF.

Scapula (*Lat. scapula*).—This is the scientific name given to the broad, flat bone lying at the upper part of the back, familiarly known as the shoulder blade, and so troublesome to many young ladies by its unseemly projection. It serves to connect the arm with the trunk of the body, and gives origin to many of the muscles by which the former is put in motion.

Scarf Skin.—See EPIDERMIS.

Scarlatina.—See SCARLET FEVER.

Scarlatina, How to Distinguish.

—In order to distinguish a case of scarlatina from other eruptive diseases as measles, erysipelas, etc., a French physician has discovered a very simple method; that is, by drawing the back of the nail or a penholder along the skin where the eruption is situated, and if a *white line* appears, or, in other words, if the skin is observed to grow pale, and to present a white trace which remains for one or two minutes or longer, then disappears, that is scarlatina.



SCAPULA.

Scarlet Fever, or Scarlatina.—

Scarlet fever is one of those diseases that are much dreaded when they make their first appearance in the household, though with proper treatment and careful nursing in the simple form there is really very little danger to be apprehended. It is otherwise, however, in scarlet fever of the malignant type.

Scarlet Fever, Dangers from.—

The troubles which may rise out of an attack are frequently the result of carelessness on the part of the nurse, neglect of orders, exposure to cold, etc. There cannot be too much care taken of the slightest case. A bad attack will compel attention, but "slight

cases," so called, are often neglected, with fatal results, or lifelong deafness or other disability. Dropsy, malignant sore throat, diseases of the kidneys, weakness of the lungs, pleurisy, and many other maladies lie in wait for the scarlet fever patient.

"After the fever has passed," says an authority, "there may follow a train of symptoms which are very inconsistent in their character, and of much danger to the patient. The throat may continue to be affected, and the glands outside may be inflamed and swell: so that the patient's head seems encased in a 'collar of brawn.' Often these glands suppurate, and a large ulcerated surface is then seen. Deafness may come on, and a discharge from the ear. Bronchitis and pneumonia are not so common as in measles. Sometimes convalescence is retarded by abscesses forming in various parts of the body; at other times there is a painful affection of the joints, which much resembles rheumatic fever. Renal dropsy is also one of the usual sequelæ, but its frequency varies in different epidemics; the face and loose parts of the skin are very pale and puffy, and this is best seen under the eyes and on the insteps; the urine is scanty and dark from containing blood; there is often headache, loss of appetite, and perhaps convulsions; this complication often comes on two or three weeks after the first appearance of the rash."

There is one remarkable sequela or consequence of scarlatina which occurs frequently, and therefore deserves particular mention, which is dropsy. At an uncertain period after convalescence—it may be some days or some weeks—the eyelids become swollen, particularly in the morning; the whole face, in another day or two, œdematous—that is, pale, swollen, and pitting or dinting on pressure; about the same time the feet and ankles swell towards night; in another day or two the skin is everywhere tense, and pressure with the finger, or any ordinary ligature of the dress, leaves pits and indentations. This general state of dropsy is called "anasarca"; it is often very slight, and easily removed by proper remedies; some-

times it is rapid in its progress, and advances to an alarming and dangerous extent.

Another consequence (or rather, in many cases, concomitant) of scarlet fever is glandular swelling about the neck and throat. These often appear early in the disease, dependent, no doubt, upon the ulcerated condition of the mouth and fauces; sometimes they commence later in the disease, and, in either case, are the source of much distress and inconvenience, long after the fever has subsided, and the patient become convalescent. These swellings are to be treated in the same way that other glandular swellings are managed. In the early stage, apply leeches and cold lotion; but, as soon as fluid is perceptible, adopt warm fomentations and poultices, and let the matter be evacuated by puncture with a lancet, as soon as ever the tumour points, or even sooner, if the fluctuation be very evident.

Scarlet Fever, Purgatives in.—

It was the opinion of Dr. Sydenham that scarlet fever is oftentimes fatal "through the officiousness of the doctor": and Dr. Chavasse says a truer remark was never made.

"There is one important caution," says the last-named practitioner, speaking of the treatment of scarlet fever, "I wish to impress upon you: do not give opening medicine during the time the eruption is out. In all probability the bowels will be opened; if so, all well and good; but do not, on any account, for the first ten days, use artificial means to open them. It is my firm conviction that the administration of purgatives in scarlet fever is a fruitful source of dropsy, of disease, and death. When we take into consideration the sympathy there is between the skin and the mucous membrane, I think that we should pause before giving irritating medicines, such as purgatives.

"The irritation of aperients on the mucous membrane may cause the poison of the skin disease (for scarlet fever is a blood poison) to be driven internally to the kidneys, to the throat, to the pericardium (bag of the heart), or to the brain. You may say, do

you not purge if the bowels be not open for a week? I say, emphatically, no. I consider my great success in the treatment of scarlet fever to be partly owing to my avoidance of aperients during the first ten days of the child's illness. If the bowels, after the first ten days, are not properly opened, a dose or two of the following mixture should be given: Take of simple syrup, three drachms; essence of senna, nine drachms; to make a mixture. Two teaspoonfuls to be given early in the morning occasionally, and to be repeated in four hours if the first dose should not operate."

Scarlet Fever, Symptoms of.—

Scarlet fever is sometimes ushered in with a convulsive fit, and the first paroxysm of fever is frequently attended with vomiting, particularly in children; the pulse is more rapid in this than in any other fever, being frequently in young children 150 or 160 in the minute, and sometimes so quick as not to be accurately measured. The tongue is peculiarly red in most cases, or the bright red papillæ are seen standing out prominently from a cream-coloured crust; the whole lining membrane of the mouth, fauces and throat, as far as it is discernible, is, in severe cases, at first bright red, and then deep purple, with numerous aphthæ or small ulcers, covered with tenacious ash-coloured crusts, similar to what in children are called by nurses the thrush, and also with one or more large and deep foul ulcers at the back of the throat. The inflammation and ulceration often extend over the mucous membrane lining the nostrils, producing a distressing and very disagreeable discharge from the nose; often, too, it extends to the back of the throat, by the duct called the eustachian tube, to the delicate structure of the ear, producing earache, abscess, and discharge of matter from the external ear, always with temporary and not unfrequently with permanent deafness. When the inflammation extends in another direction, and affects the glottis, or commencement of the windpipe, it produces the peculiar breathing and other symptoms of croup,

The eruption is not an efflorescence only, for sometimes a numerous crop of minute vesicles accompanies the diffused redness, producing a roughness over the surface. The rash, in some mild cases, is scarcely discernible, and in many others is so evanescent as to require frequent examinations to detect it; you will, in such cases, be most likely to discover it in the evening or at night, at which time there is most fever. After three or four days the rash fades away, and the cuticle or scarf skin gradually desquamates or peels off; and, in very severe cases, the nails also fall off, wholly or in part.

The fever may be of every degree of intensity, and, like every other epidemic, varies in this respect in different visitations.

Scarlet Fever, Treatment of.—

The case having been declared to be scarlet fever, all the precautions given in the preceding chapter for infectious diseases should be observed, and the smallest order of the physician should be carried out. The sick person should be isolated at once in a room as much apart from the other members of the family as possible—the higher up in the house the better. The room should be kept at an even temperature of 65°; light a fire, if possible, and have the window down an inch at the top. Throw the window open and change the air entirely twice a day, covering the patient, head and all, at the time, and until the room is again warm. Do not be afraid of fresh, dry, outside air, but be sure that your patient is covered, head and all, so that no cold air is breathed while you are airing and warming the room.

Give the patient two or three times daily a warm sponge or plunge bath, being very careful that he is covered with a blanket during the bathing, thrown over the bed or tub; dry quickly with warm soft towels, without rubbing, and as the patient lies in bed rub the entire surface of the body with vaseline, or whatever oil the physician orders.

The bedclothing should be warm, but never heavy. Keep the legs and feet warm.

Gruels, simple broth, milk, etc., is generally enough by way of food. Where there is exhaustion from the fever, the doctor will give orders as to strong and stimulating nourishment. Abandon the notion that the fever is increased by such food; life will depend upon its careful administration. Cold water and weak lemonade may be given freely, unless the doctor orders differently.

Keep the patient strictly in bed; make use of bed-pan and urinal to prevent getting up. Guard in every way against a check of perspiration. If the patient is propped up in bed, see that a short jacket or small shawl is put over the nightdress, but use nothing that cannot be washed.

Notice the breathing at night or in sleep, whether it be even and deep, or short and laboured, as if there were trouble with the air-passages. Be particularly watchful of the condition of the excretions, especially of the urine; should it become scanty or smoky-coloured, report it at once to the physician. Observe whether there is a free though seemingly harmless discharge from the nose; this may indicate diphtheric trouble. See whether there is any swelling of the limbs. In short, there is nothing which must not be observed with care, and reported accurately to the doctor. The skin becomes dry, and generally begins to scale off about the fifth day after the rash appears. No patient should be allowed to leave his bed until this process is completed. The warm baths should be kept up, the least chilliness guarded against, and the temperature of the room allowed now to be 70°. After the peeling is over, the patient should still remain in his room for two weeks, and should be separate from other members of the family not less than a month from the commencement of the disease. Very severe cases of scarlet fever may follow from exposure to light ones. See that the patient is well wrapped up, with hands and feet protected, on first going into the open air.

Most cases of scarlet fever recover in a week, except those which are malignant, and those in which the patient, if a woman, is at the same time pregnant. The latter

condition much increases the danger, and hence women should then be extremely careful not to go near a case of scarlet fever.

The mild cases must be nursed simply. Malignant cases may be knocked down at once, and die within forty-eight hours. Ammonia and brandy must be given when the state is one of great prostration.

Gargles are not of much use to the throat; brushing the fauces over with tannin and glycerine, or with a solution of nitrate of silver, is the best remedy. In cases of discharge from the ear, this must be syringed with warm water three or four times a day, and a little cotton-wool should then be pushed in.

Scarlet Fever, Treatment of, in America.—"The following plan of treatment," says an American physician, "has proved successful in so many cases, that it is believed, if carefully observed, any ordinary case of scarlet fever may be cured by it, and without leaving any ill-consequences behind:—

"1. For the first five or six days, keep the room cool, thoroughly ventilated, and scant clothes on the bed.

"2. Note carefully and warily when there is a change in the temperature of the skin, and the patient feels chilly; then instantly close the windows, and put extra covering on the bed.

"3. Apply to the throat a barm and oatmeal poultice, changed three times a day, and give every four hours a tablespoonful of the following mixture:—

Diluted sulphuric acid	1 drachm.
Simple syrup	1½ ounce.
Infusion of roses (rose leaves and boiling water)	4½ ounces.

"[The sulphuric acid in the mixture is regarded by some physicians as a *specific in scarlet fever*, as much as quinine in ague.]

"4. Administer no opening medicines for the first ten days at least, and no leeches, blisters, emetics, spongings, or painting the tonsils with caustic,

"5. Keep the patient on a low diet for the first two days, but give cold water freely.

"6. The patient must not leave the house in the summer under a month; in the winter under six weeks."

In cases of scarlet fever, it is a practice, we believe, with some American physicians, and regarded by them as of great importance, to anoint the body all over two or three times daily with some fatty substance, as bacon or ham fat. This allays irritability, and is found very beneficial to the patient.

Sciatica (*Low Lat. sciatica*; from *Gr. ischiadikos*, relating to the hips; from *ischion*, hip joint).—This is a form of neuralgia which, in a good many respects, differs from others generally comprehended under this name. The pain most frequently affects the hip or buttock, and extends downwards from the point where the great nerve of the lower extremity issues from the trunk to the space behind the knee. It may even extend further, so as to affect the nerves of the leg and foot, but in all cases the pain at the back of the buttock is more severe than elsewhere. Sometimes the pain arises from pressure on the nerve within the abdominal cavity, from enlargement or displacement of the womb, for instance. Or the great gut may be distended with feces and press upon it, for the pain in the buttock is very often accompanied by constipation. Again, in a goodly number of instances the pain seems due to inflammation or some analogous change in the health of the nerve itself. If so, the patient has most probably a rheumatic taint, or has been exposed to cold or wet.

In rheumatic cases, especially in sciatica, dependent on this cause, iodide of potassium is the remedy. Full doses of ten grains or more must be given. Bicarbonate of potass is useless. In neuralgic headache, sal ammoniac often does the greatest good. That, too, must be given in large doses—thirty grains or so; and it does not always succeed.

In sciatica local remedies have, as a rule, more power than general ones. This is

hardly true of real neuralgia, but even in that our local remedies seem to surpass all others; moreover, it seems to be best adapted for those very cases which we can, not treat otherwise: we allude to the continuous current of electricity. This form of electricity is to be carefully distinguished from those commonly in use, which is termed the interrupted current, and which not only is of no use, but may positively do harm. The continuous current is that which does most good in true frontal neuralgia. Other local means have been tried—blisters, red-hot irons, ointments containing aconite and other powerful drugs; all have been tried, and too often tried in vain. As a rule, if the neuralgia depend on a local cause, it will disappear with the removal of that cause, and will not disappear until it is removed. Thus it is utterly useless to apply soothing remedies, ointments, lotions, or what not, for a neuralgia dependent on a bad tooth or diseased jaw. Once these are seen to, the neuralgia will go.

With sciatica it is different; that very often is greatly benefited by bathing in a hot saline fluid, like some of the continental mineral waters, especially if the douche and shampooing are had recourse to. Many cases of sciatica are thus cured, and many more might be if the treatment were employed.

Acu-puncture was at one time largely employed for sciatica; and in many cases it did well, but in others again it did not. In some cases the injection of morphia into the parts about the nerve may be said to cure the sciatica; but even when the pain is removed, a long course of time and remedies must be employed to recover perfect health. Blisters over the course of the nerve, even, have been followed by good results, especially when a little morphia has been sprinkled over the denuded parts; but we believe that hypodermic injections and the local application of hot medicated waters are the best and most reliable remedies for sciatica.

Sclerotic (*Gr. skleros*, hard).—The sclerotic coat, or white of the eye, is dense

and fibrous, and forms the most external covering of the posterior four-fifths of the eyeball. Internal to it is a dark vascular covering, termed the choroid coat of the eye. This proceeds as far forward as the ciliary circle, and is then reflected back towards the vitreous humour, forming the ciliary processes. Immediately within the choroid is found the retina, or nervous coat of the eye, which is seemingly the expansion of the optic nerve. This coat receives the picture of external objects, and from it impressions are conveyed to the brain by the optic nerve.

Scorpion, Sting of.—See POISONOUS INSECTS.

Scrivener's Palsy (*Old Fr. es'crivain; Ital. scrivano*, notary; from *Lat. scribo*, I write).—This is an exceedingly curious form of nerve-affection, which, fortunately, is not very common. It is also called *writer's cramp*, apparently from the fact that it most commonly attacks those who have long used the pen: but it is by no means confined to these, and may attack almost any handicraft worker. The mischief seems to lie in a want of co-ordinating power in the muscles, which have long been accustomed to fulfil one definite function. Each one seems to act independently, and so it becomes quite impossible to call them into simultaneous or concerted play.

Scrivener's Palsy, Symptoms of.—At first there is merely unsteadiness or stiffness after a long day's work, which speedily passes away; but by-and-by this makes mischief, for the writer scrawls at some point, perhaps, where he wishes to be most particular, the pen darting away out of his hand. As the disorder advances, the patient gets worse. As soon as the pen is touched, off starts the arm, so that it is quite impossible for him to write even legibly. At the same time, curiously enough, he may be perfectly able to use his hand for other purposes; but the moment he takes a pen in hand it becomes altogether unmanageable.

Scrivener's Palsy, Treatment

of.—There is only one remedy—that is, giving over the kind of work which has produced the malady. The patient may do anything else he likes, but it is useless to attempt to carry that on; and though it appears late in life, the patient must seek another vocation. The sooner this is fairly faced, the better. If it comes on in one who can afford complete relaxation, and who can go abroad and travel for a time, he may come back perfectly well, and able to take pen in hand again for a moderate time only. Not so one who can only take partial rest: that is simply useless. Many poor clerks, compelled to give over work, put themselves under treatment, and just when they begin to get well, they get sold out of all they possess. Better for them had they at once taken to something which would have permitted them to use the other hand until the affected one got well. The great remedy is the continuous galvanic current and rest. Cod-liver oil, good food and strychnine, with change of air, should be had, if possible.

Scrofula Produced by Close Bedroom Air.—See CONSUMPTION PRODUCED BY CLOSE BEDROOM AIR.

Scurvy (*Ger. scharf; Swed. skarf*, scurf, akin to *Lat. scabies*, scab; *A.-S. scelfrian*, to gnaw).—Scurvy is a diseased blood state induced chiefly by prolonged privation of fresh vegetable and animal food. Although not exclusively a sailor's malady, its ravages have been most disastrous at sea, devastating, previous to this century, the navies and merchant marine of all nations. Pizarro's squadron included two thousand seven hundred men, of whom only one hundred survived. Ships were often lost adrift at sea, the crew unable to work, and perishing. Anson's fleet, in 1742, in nine months lost six hundred and twenty-six out of nine hundred and sixty-one men.

The chief cause of this pest of the marine was the exclusive diet—salt meat and hard dry bread with impure and deficient drinking water—upon which sailors subsisted

during prolonged voyages. Exposure to cold or to tropical heat, fatigue, and the unsanitary and foul condition of ships, contributed to the development of scurvy. As early as 1617, Woodall recorded the virtues of lemon juice in curing this disease, and in isolated cases its use and a vegetable diet saved the crews so treated. But not until the latter half of the eighteenth century were improved ship hygiene and vegetable diet at sea enforced. Thus, only thirty years after Anson's fearful loss, Captain Cook sailed on a three years' voyage round the world, losing only one man by disease.

Scurvy, Precautions against.—

The following suggestions have been issued by the Board of Trade for the information of ship-owners and ship-masters:—

"Every ship on a long voyage should be supplied with a proper quantity of lime or lemon juice.

"The juice having been received in bulk from the vendors, should be examined and analyzed by a competent medical officer. All measures adopted for its preservation are worthless, unless it be clearly ascertained that a pure article has been supplied.

"Ten per cent. of brandy (spec. grav. 930), or of rum (spec. grav. 890), should afterwards be added to it.

"It should be packed in jars or bottles, each containing one gallon or less, covered with a layer of oil, and closely packed and sealed.

"Each man should have at least two ounces (four table-spoonfuls) twice a week, to be increased to an ounce daily if any symptoms of scurvy present themselves.

"The giving out of lime or lemon juice should not be delayed longer than a fortnight after the vessel has put to sea."

Scurvy, Symptoms of.—First, there is a change in the colour of the skin, which is pale or sallow; then the mind becomes listless, and the patient is averse to taking exercise, and seems apathetic. There are pains about the limbs, and so the sufferer is glad to lounge about and rest himself,

Gradually purplish spots, or petechiæ, are observed, especially about the legs and thighs; they are not usually raised above the surface of the skin; then large patches form, as if numbers of these small spots had run together; and often there is an appearance as if the patient had been bruised. The lips are pale, the face becomes bloated, the conjunctivæ of the eyes become swollen and red. The gums, at first pale, begin to swell at their free margins, so as to encroach upon, and almost envelop, the teeth; they then become spongy, dark-red, or livid—not painful, but disposed to bleed when irritated. Sometimes the teeth are loosened and fall out; there is also a sickening fetid odour from the breath. Chewing is now rendered impossible, and even fluid food is swallowed with difficulty. Often swellings occur in various parts of the body, and chiefly near the bend of a joint; the most common seat of this condition is the ham, and, next, the elbow, or beneath the jaw. There is often breathlessness and syncope, or fainting; and this is dangerous, as sudden death may, in this way, take place: therefore, any one who is bad with scurvy should be kept in the recumbent position, and not be allowed to sit.

In bad cases ulceration of the skin often comes on, and may spread rapidly and be attended with dangerous bleeding. Very little difficulty can occur in making out a case of scurvy, and especially if the antecedent conditions be known.

Scurvy, Treatment of.—This must consist in supplying the patient with the material, by the deficiency of which his disorder has been produced. It is wonderful how, in a very bad case, an immense improvement will take place in a few hours by giving lime juice. Amongst the vegetables which may be given are oranges, lemons, limes, cabbages, lettuce, potatoes, onions, mustard and cress, dandelion, scurvy-grass, and grapes. An ounce of lemon juice should be issued daily when vegetables are short. The other articles of diet must be so arranged as to be easy of digestion,

Sea-Bathing.—This invigorating and wholesome exercise affords much pleasure to those who are healthy and strong, and may be indulged in with impunity daily in summer. Sea-bathing is also of great service in some diseases, especially when there is debility; but great caution is needed in such cases, or mischief may accrue. Persons in a delicate state of health commence by taking one or two tepid salt-water baths, and then one or two quite cold, by way of a preparation for the open air bath, which should be taken about eleven or twelve in the day, and, if possible, in bright sunshine. The first bath should be little more than a plunge in and out, gradually extending the time to five or ten minutes. Brisk rubbing with a rough towel and a sharp walk or run should follow.

No doubt much of the supposed advantage of sea-bathing is often due to the sea-air and the other advantages, mental, physical, and social, which belong to the various watering-places on the coast; but this combination of favourable conditions is so invaluable that we have often seen a single day's excursion to the sea-side produce a marked and obvious improvement in those whose general health had for any reason fallen below their normal standard of vigour. Unfortunately, many of the sea-side resorts are supplied with impure water, often contaminated with sewage from the cesspools, which send their disgusting contents soaking through the loose sandy soil for hundreds of feet, poisoning the drinking water of wells and cisterns, and spreading the germs of diarrhoea, typhoid fever, diphtheria, etc., to such an extent that, if they are not guarded against, even the benefit of sea-air and sea-bathing are more than counterbalanced.

Sea-kale.—This wholesome and acceptable vegetable in late winter and early spring is the *Crambe maritima*, an ordinary sea-kale growing wild on the sea-coast improved by cultivation. In sea-kale there is usually no sugar found, but a good deal of mucilage and some starch are present.

Sea-Sickness.—Much has been written on sea-sickness, but the exact mode of its causation is unknown, though some of its causes are identical with those which produce nausea on shore. Some delicate people cannot ride with their back to the horses of a carriage or to the engine of a train. If they do, they speedily become giddy and faint, with a tendency to sickness, though that is rarely induced. We thus have seen the same cause come into play more forcibly in a boat but a little way off land. The waves running past the boat and the course of the boat in the opposite direction, tend to make an individual giddy, and so favour the advent of sea-sickness in its aggravated form. Under such circumstances, a fixed look on the shore at a distance may preserve the individual from being actually sea-sick, though he may be faint.

Even on shore unpleasant sights and smells may cause nausea and sickness. It is no uncommon thing for a young student to get sick at his first operation, especially if his stomach is irritable, and, as is well known, evil smells are even more powerful than foul sights in this way. To an individual with a tendency to nausea, the sight of bilge water and tar, or of grease, oil, and the like on shipboard, still more the sight of others in the act of being sick, are powerful inducements to go and do likewise.

But these things, at least some of them, persist; sea-sickness does not. It either passes away on landing, or, if the voyage is one of some duration, it gradually leaves the traveller hungry as a hawk. It is quite plain, therefore, that the immediate cause of the feeling of sickness is the unaccustomed motion of the vessel; once the individual has become acclimatized to that, the feeling passes away, and the benefit of the sea-air is felt.

Sea-Sickness, Causes of.—Under ordinary circumstances an individual goes on board ship without any preparation. As soon as the vessel begins to feel a little the motion of the sea, the passengers begin to

feel queer, especially if they have been eating and drinking more than has been good for them before putting to sea. If to this the individual superadd giddiness, induced by looking at the sea rushing past, there is speedily an end to it—the sea claims her own. There can be no question of the fact that the motion is the main cause of the nausea, for it is much worse in a small boat dancing freely on the water than in a large vessel, which is comparatively steady, and it is worse in what is called a chopping sea than in a regular even swell, especially if the vessel be small enough to respond to all the motions of the waves. The motion communicated to the vessel is communicated to the passengers; the crew have their sea legs on board. To them the motion is nothing: they balance themselves as easily as on land. But the freshly embarked passenger cannot do this; he cannot balance himself; he is in constant danger of falling, or seems to be so, and his body is agitated in endeavours to support himself. These violent efforts induce motion in the organs contained in the abdomen, and doubtless also the nerves which supply these. Of course, if these viscera are overloaded, the evil comes all the more speedily. A sudden feeling of nausea causes the entrance to the stomach to relax; the motion superadded to contraction of the abdominal walls speedily causes evacuation of its contents, and one act of vomiting begets another. Meanwhile, the original cause of the mischief, the motion of the vessel, continues, and the stomach, now rendered irritable, responds more easily to this stimulus, and so the sickness is kept up. Just behind the stomach and liver lie an important group of nerves, which partly control the heart's action; the motions of the organs in the abdomen much affect that, and so perhaps the feeling of nausea, as well as the attempts at vomiting, are kept up. But vomiting always ends in producing intense depression; it tries every muscle in the body—nothing exhausts like it; and when to the former nausea and retching are

superadded this feeling of exhaustion, the full misery of sea-sickness is developed; but by-and-by, as the system becomes habituated to this motion, as it becomes habituated to almost everything, the new sensations pass away, perhaps to return no more.

Sea-Sickness, Prevention of.—

Prevention is better than cure, and of nothing is this truer than sea-sickness. As, moreover, many of us cannot stay at home for ever, it is better to try to understand the best method of avoiding the scourge if we can. In a short voyage, as across the Channel, we may expect or hope to avoid sea-sickness; in a longer one we can hardly do so.

Should we desire to avoid the terrible nausea and depression, it is best to have the bowels well opened the day before, so that they shall not be loaded. We should also take care that the stomach is not overloaded; but as retching on an empty stomach is not pleasant, it is desirable to take a little food an hour or two before embarkation. Drinking or smoking, especially in those not accustomed to either, are strenuously to be avoided, as tending to render the stomach irritable. When the individual goes on shipboard, he should select a spot where the motion is likely to be least—that will be as near the centre as possible—and then, as the motion of the body standing is greater than sitting, and sitting than lying, it is best for him to lie down flat on the deck, if possible.

Sea-Sickness Relieved by Regular Breathing.—

A writer in one of our periodicals states that many years ago he had occasion to frequently cross the Irish Channel, and was invariably sick on there being the least motion of the water. Once, however, when it was very rough, and the wind blowing a hurricane, he hit upon an expedient which proved an effectual preventive: he made his respiration coincide punctually with the heave and fall of the vessel. As she rose, he inspired slowly and

regularly; and as she fell he expired correspondingly, the effect being so completely successful as at several times to produce sleep. But each of these times—presumably because the breathing was not then synchronous with the vessel's movements—he was awakened by sensations of sickness, which two inspirations and expirations as above explained immediately dispelled, enabling him to complete a very rough passage with comparative comfort.

Sea-Sickness, Treatment of.—

As to internal remedies, all things have been tried; none do so well as spirit of chloroform, which used to be called chloric ether. Thirty drops or even a teaspoonful of this may be taken in a little water as soon as the traveller goes on board and has laid down. For it is not given with a view to cure, but with a view to prevent the nausea. Certain it is that in a good number of cases the spirit of chloroform either enables the stomach to meet the shocks better by stimulating it or by soothing it; at all events, in a short voyage there is a good chance of escaping.

In a longer voyage, when the sickness is passing away, dram doses of aromatic spirit of ammonia with a little spirit of chloroform should be given, but a still better pick-me-up is iced champagne. Fortunately, the two are not incompatible.

A simple method for the prevention of sea-sickness has been recently recommended by a French authority. A few drops—say, from two to five—of the nitrate of amyl are applied close to the nose by means of a handkerchief. The inhalation must be rapid, care being taken to prevent the mixture of atmospheric air in any great quantity. The patient will soon feel a sense of pulsation in the temples, and the face, losing its deadly hue, presents a light rose colour. These signs of salutary reaction continue for about half an hour, after which the individual falls asleep. The sickness may re-commence in twenty-four hours or so; the inhalation in such case must be repeated as before. The remedy appears

to act most efficaciously when employed immediately after the first act of vomiting. This method has been tried on 124 persons. In 121 cases the sickness was stopped at once; that is to say, no efforts of vomiting were noted. In the remaining three cases it was necessary to repeat the inhalation three times before the desired results were obtained.

Sea-Sickness, Treatment of, by Chloral.—

Another method of treatment is to take chloral. In doing so, however, the following precautions must be observed: No one should take more than twenty grains of chloral, or its equivalent of two teaspoonfuls of the syrup of chloral, in one dose, without the advice of a physician. The action of the drug will be much expedited by diluting the dose largely, say with half a tumbler of water. The remedy should be taken before the vessel is in motion, but not until every arrangement has been made which will insure the patient against being disturbed or roused during the passage. The patient should lie down, and, weather permitting, remain on deck. Although chloral taken in the dose indicated will generally induce sleep, the patient may pass into a semi-conscious, dreamy state, quite as favourable for the purpose under consideration. The drug is, however, cumulative in its action, and must not, therefore, on a short passage, be repeated. This treatment may be used for short voyages. In long voyages, however, as to America, two doses of twenty grains may be taken at an interval of eight or ten hours, and afterwards five-grain doses twice daily, till the patient becomes accustomed to the motion of the vessel.

Sea-Weeds.—The exact nutritive value of such sea-weeds as are eaten has not been ascertained; but one thing is certain—they cannot of themselves support life for any length of time. In times of scarcity they have proved serviceable to the poor inhabitants of some maritime countries: in Ireland, for example, they were used when

the potato crop failed. Sea-weeds, however, are rather to be looked upon as occasional dainties, than as affording an agreeable substitute for ordinary vegetables

Sebaceous Glands (*Lat.* sebum, tallow).—Besides the sudiparous, or sweat glands, there is another glandular apparatus, situated in the skin, which is of especial importance, particularly as in them one of the most common and annoying of skin diseases, *acne*, has its seat. These are the *sebaceous* or *sebiparous* glands.

While the sweat glands are composed of a single tube coiled upon itself at its lower extremity, which is situated in the very deepest portions of the skin, the sebaceous glands are rarely if ever formed of a single tube, but have a duct more or less straight, with a mass of glands grouped about its deeper end, forming what is known as a *racemose* gland, from the resemblance to a cluster of grapes (*Latin, racemus*). The sebaceous glands are almost invariably connected with the hairs; upon hairy parts, as the scalp, they form appendages at the sides of the hairs, and their ducts open into the hair follicles.

Generally there are two to each hair, situated opposite each other; but in some situations large hairs have a number, even from four to eight, situated around them, forming a sort of collar about the hair. In some situations, on the other hand, as on the smooth face, nose, forehead, etc., the hairs are very small and rudimentary, while the sebaceous glands are large, and the hair there appears as an appendage at the side of the comparatively large gland. Very few of the glands open directly on the skin without a connection with a hair, although this latter may sometimes be so small as to escape ordinary observation.

The secretion from these glands is of an oily nature, and when in healthy condition is perfectly fluid at the temperature of the body. The quantity is not very great, and the main function of the secretion appears to be to keep the skin in a flexible state. They are similar in structure to the mucous

glands, but secrete an oily or fatty fluid, which forms the suet or fatty portion of the body.

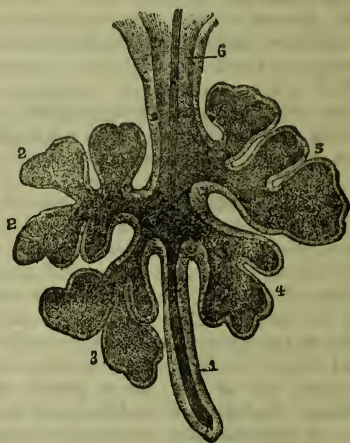


FIG. 1.—LARGE SEBACEOUS GLAND.

Fig. 1 represents a large sebaceous gland greatly magnified: 1, hair in its follicle; 2, 3, 4, 5, lobules of the gland; 6, excretory duct traversed by the hair.

A sebaceous gland with a small hair attached, greatly magnified, is shown in Fig. 2: 1, hair; 2, sebaceous gland.



FIG. 2.—SEBACEOUS GLAND, WITH A SMALL HAIR ATTACHED.

Sebaceous Glands, Action of Muscles of Skin on.—See MUSCLES OF SKIN, ACTION OF, ON SEBACEOUS GLANDS.

Sebaceous Glands, Diseases Caused by Disorders of.—When there is disorder of these glands, we have, as mentioned already, *acne*, and also one of the various forms of dandruff, or *seborrhœa*, and *comedo*, or what are popularly known as flesh-worms, etc. Under certain circumstances they fail to act, more or less, and we have a hard, dry skin—*scleroderma*. In the proper care of the skin, the oily products of these glands, which adhere to it with the dead epidermal matter, are removed continually; when neglect allows this to accumulate, the openings of the sebaceous as well as those of the sweat glands are clogged, work is thrown on other organs of the body, and slow disease is engendered.

Seborrhœa (*Gr.* sebum, tallow; *rrheo*, I flow).—Seborrhœa, or *acne sebacea*, is a disorder of the sebaceous glands which is very frequently found to accompany ordinary *acne*, but which may occur alone. This consists in an abnormal or unhealthy secretion of these glands, and shows itself on the surface either in the form of a greasy coating or condition of the skin or scalp, or in the collection of yellowish scales which are very greasy. Many faces are always greasy and oily, and it is only with the greatest difficulty that the deformity can be hidden; and, again, we occasionally have a scalp whose hair is in such a constant state of oiliness as to be very distressing to its owner.

The dry form of seborrhœa appears sometimes on the face, especially on the nose and cheeks, but more frequently upon the scalp in the form of whitish or yellowish greasy scales. Upon the scalp it forms much of so-called *dandruff*, or *dandriff*, and is a very annoying complaint. Not only is it annoying from the constant shedding of the scales, like snow, upon the clothing, but it is particularly uncomfortable, because it is surely attended, sooner or later, with loss of hair. In many of the cases of *alopecia*, or loss of hair, this condition has preceded.

The popular idea is that the dandruff destroys the hair—"eats it off," as the M. D.

patient says. This is not wholly true, but, like so many popular ideas, there is a grain of truth in it. Seborrhœa causes loss of hair in two ways: first, because the hair loses its proper lubrication, which should come from the oily secretion poured upon it continually by the sebaceous glands, their secretion drying into scales; and second, because the same causes which produce the seborrhœa operate also to undermine the nutrition of the hair, and it falls as a consequence. The dandruff does not "eat off the hair," but it should never be neglected, because its natural end is in baldness.

Seborrhœa, Causes of.—The causes of seborrhœa are the same as those of *acne*, and the dietetic and hygienic rules of the one apply to the other. It is a disease of debility, like *acne*, and requires tonics.

Seborrhœa, Treatment of.—It is useless to try and remove seborrhœa permanently by washing or combing the head, or by stiff brushing. These measures often aggravate it. There should be a certain amount of brushing daily, but that with a comparatively soft brush; while the fine-toothed comb, by removing a considerable quantity of greasy matter adhering to the scalp (which would subsequently dry and fall), gives relief for a longer time; still, by the irritation following its use, it may rather aggravate the disease. The scalp should be occasionally washed out, and an ointment, or some oily matter, applied immediately thereafter. The most harmless application, and yet one often of very great service, is a pomade made of one drachm of tannin in an ounce of rose-ointment. It should be applied to the roots of the hair, and well rubbed into the scalp. Another remedy of value is that commonly used by the laity, namely, castor-oil and alcohol, with a little spirits of rosemary.

The careful use of these will generally keep the trouble in check; but as this, like so many skin affections, is a sign of debility, or often of imperfect digestion, permanent

relief can be expected only from a thorough investigation of the cause and condition of the patient.

Second Dentition.—See TEETHING, SECOND DENTITION.

Secretion (*Lat. secretus*, severed or separated).—The name given to the process by which substances, different in their nature from the blood itself, such as saliva, bile, urine, etc., are separated from the blood itself, from which they are derived. The name given to the process is also applied to the substances separated by the process, and hence saliva, bile, urine, etc., are called secretions.

Secretion of Tears.—See LACHRYMAL GLAND.

Sedative Eye Wash.—See EYE WASHES.

Sedentary Occupations.—A brief mention may be made here of the injurious effects of protracted labour in one position. Shoemakers and tailors, owing to their constrained attitudes and the bad air of their shops, become dyspeptic, anæmic, and consumptive, and do a great deal more thinking than is good for them. The sedentary life of literary people and clerks is apt to affect them similarly.

Seeing, Act of.—The act of seeing was involved in the mystery with which all vital functions were in former times invested, until the great astronomer, Kepler, first recognised the fact that the eye is a camera, and as such is subject to the same physical laws as any other optical instrument.

Self-Government.—"Self-government," says Dr. Graham, in his deservedly popular work on medicine, from which we have already quoted, "possesses great power over disease. Fretfulness and impatience increase the action of the heart and arteries, and impair the action of the skin, and thus

aggravate bodily diseases, while resignation to the will of God and a cheerful spirit have effects of the very opposite kind; and we cannot suffer from any complaint which is not relieved by their salutary influence. 'A merry heart doeth good like a medicine; but a broken spirit drieth the bones.'"

"With the aid," remarks a writer in the *Lancet*, "or under the influence of 'pluck,' using that term in a modern sense and in relation to the daily heroism of life in the midst of difficulties, it is possible not only to surmount what appear to be insuperable obstructions, but to defy and repel the enmities of climate, adverse circumstances, and even disease. Many a life has been saved by the moral courage of a sufferer. It is not alone in bearing the pain of operations, or the misery of confinement in a sick-room, that this self-help becomes of vital moment, but in the monotonous tracking of a weary path and the vigorous discharge of ordinary duty. How many a victim of incurable disease has lived on through years of suffering, patiently and resolutely hoping against hope, or, what is better, living down despair, until the virulence of a threatening malady has died out, and it has ceased to be destructive, although its physical characteristics remained? This power of 'good spirits' is a matter of high moment to the sick and weakly. To the former it may mean the ability to survive, to the latter the possibility of outliving, or living in spite of, a disease. It is, therefore, of the greatest importance to cultivate the highest and most buoyant frame of mind which the conditions will admit. The same energy which takes the form of mental activity is vital to the work of the organism. Mental influences affect the system, and a joyous spirit not only relieves pain, but increases the momentum of life in the body. The victims of disease do not commonly sufficiently appreciate the value and use of 'good spirits.' They too often settle down in despair when a professional judgment determines the existence of some latent or chronic malady. The fact that it is probable they will die of a particular disease casts so deep a gloom

over their prospect that, through fear of death, they are all their lifetime subject to bondage. The multitude of healthy persons who wear out their strength by exhausting journeys and perpetual anxieties for health is very great, and the policy in which they indulge is exceedingly short-sighted. Most of the sorrowful and worried cripples who drag out miserable lives in this way would be less wretched and live longer if they were more hopeful. It is useless to expect that any one can be reasoned into a lighter frame of mind; but it is desirable that all should be taught to understand the sustaining, and often even curative, power of 'good spirits.'

Seltzer Water.—See MINERAL WATERS.

Senna, Compound Infusion of.
—See INFUSIONS.

Senna, Compound Mixture of.
—See DRAUGHTS.

Senna, Confection of.—See ELECTUARIES.

Senses, The Five.—The organs of sense are the organs by means of which the mind becomes aware of the appearance and properties of the various objects in the external world.

In a famous satire an inhabitant of Saturn is asked, "How many senses have you?" to which the inhabitant of Saturn replies, "Seventy-two; but every day we live, we lament that we have so few."

The European has been taught to be so well satisfied with five senses that he is apt to regard as an absurdity the attempt to alter or enlarge that sacred number. "Yet if we look closely into the matter," remarks Mr. G. H. Lewes, "we find that five is either too few or too many. Too few if every distinct source of special sensations is to be called a sense; too many if only that is worthy to be called an organ of sense which—as in the case of the eye or the ear—ministers to a single function, and yields

only one group of special sensations. When it is said, 'Man has only five senses,' it is said that, over and above the sensations of touch, sight, hearing, smell, and taste, he has nothing to be called sensation. This is manifestly wrong. 'The division of our external senses,' says Hutcheson, 'into five common classes is ridiculously imperfect. Some sensations, such as hunger and thirst, weariness and sickness, can be reduced to none of them; or if they are reduced to feelings, they are perceptions as different from the other ideas of touch—such as cold, heat, hardness, softness—as the ideas of taste or smell.'

For all ordinary purposes, however, the common division of the senses into five is very convenient. These five are seeing, hearing, tasting, smelling, and feeling; their respective organs—the "five gateways of knowledge"—being the eye, the ear, the tongue, the nose, and the skin."

Separation of Epiphyses.—See DISLOCATION, APPARENT.

Septum of Nose (*Lat. septum*, hedge, fence).—The two nostrils are separated from each other by a bony cartilaginous "septum" or division; they are lined by the mucous membrane which secretes the peculiar mucus of the nose. This membrane is continuous with that of the eyes, through the canal or "lachrymal duct," which conveys the superabundant tears into the nostril; it is also continuous with that of the throat.

Serous Membrane (*Lat. serum*, watery part of milk; *membrana*, skin, film).—This membrane envelops the brain, lines the chest and abdomen, and covers the lungs, stomach, intestines, and other organs of the abdomen and chest. It has a smooth, shining appearance, and is constantly moistened by a watery, or serous, exhalation, in consequence of which it receives its name. It has different names, however, in different parts of the body, according to the cavity it lines. In the chest it is called

the *pleura*, and when inflamed the disease is called *pleurisy*. In the abdomen it is called the *peritoneum*, and that which surrounds the brain is known as the *arachnoid*. In a state of health it is white, but when inflamed it becomes red, the vessels being charged with blood; it is also apt, when inflamed, to form adhesions to the parts on each side of it, so that the lungs may become glued to the ribs, or the intestines to the internal surface of the abdomen, or to each other. Dropsies are caused by the exhalations from this membrane, the water collecting in cavities and not being carried off by the absorbents.

Serum.—The thin watery fluid which separates from blood when clotted or coagulated, as the whey or watery part of milk separates from the curd or fatty portion when rennet is infused in milk.

Severe Exercise.—See EXERCISE, SEVERE.

Sewer Pipes.—See DRAINS AND DRAINAGE.

Sewers, Effluvia from.—See CESS-POOLS, EFFLUVIA FROM.

Sewing Machine Workers, Ills of.—The effect of using sewing machines is sometimes injurious. It is not worth while to mention any special effect. The muscular exertion, however, is of a monotonous character, and may produce muscular fatigue, which is prejudicial to the general health. It has been known to cause neuralgia in the leg. In general, the use of the machine two or three hours a day is probably beneficial to most women; but a whole day's work, if the machine is run by the feet of the worker, is far too severe, and steam power had better be used. Much has also been done by applying the principle of alternate effect, by a treadle which is moved both by the downward and the upward movement of the feet, and employs both feet at once, or one at a time, at will. Many will find relief by alternate basting

and sewing, each for twenty or thirty minutes.

Shallot (contraction of *Fr. eschalot*).—The shallot is a kind of onion, and is a native of Palestine. Its cloves are milder



SHALLOT.

than those of onions, and it finds employment in salads, seasonings, and pickles, and is also used to flavour vinegar.

Shedding of Hair.—See HAIR, SHEDDING OF.

Sheets.—In regard to sheets, the preference that so many housekeepers show for linen sheets, rather than cotton, is not, in the opinion of many, supported by sound rules of health. The best kind of sheeting, especially for winter use, is the strong and warm "Bolton sheeting," whose warp and woof are far larger and coarser than those of ordinary sheeting.

Shell-Fish.—Shell-fish contain about 13 per cent. of solid matter. Oysters are the easiest of digestion. Lobsters, crabs, mussels, etc., are more difficult to manage, especially when not well cooked, and the last named sometimes cause serious injury.

Shell-Fish, Poisonous.—Mussels, and some other fish, have been occasionally known to disagree, producing sickness, giddiness, swelling of the face, with an eruption like the nettlerash; and sometimes more alarming symptoms, as violent pains

in the stomach and bowels, convulsions, and even death. The treatment is an emetic, a purgative, then twenty or thirty drops of ether on a lump of sugar; and if the distressing symptoms have not soon subsided, ten or fifteen drops of laudanum may be given in a little brandy and water.

Shingles.—*See* HERPES.

Shoemakers.—*See* SEDENTARY OCCUPATIONS.



FIG. 1.—DISLOCATION OF SHOULDER-JOINT.

Shoulder, Dislocation of.—If the shoulder be supposed to be dislocated, and you are sure there is no fracture, no harm will arise from your trying this simple experiment, which will sometimes occasion the replacement of the bone in the socket. Gently raise the extended arm by the wrist and elbow, until it is elevated a little above the horizontal line, and then allow it suddenly to fall by its own weight; upon which the head of the bone will sometimes resume its place in the socket; but if it

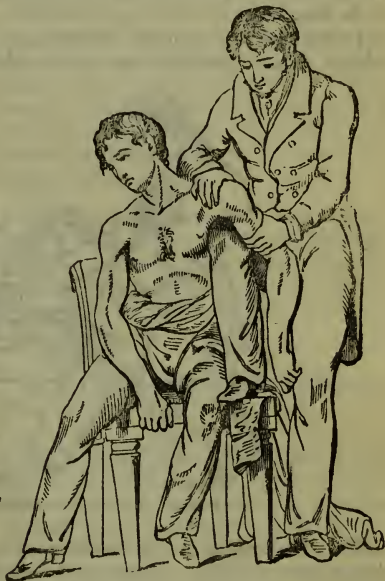


FIG. 2.—REDUCTION OF DISLOCATION OF SHOULDER-JOINT.

Shoes, Boots and.—*See* BOOTS AND SHOES.

Shoes, Tight.—*See* TIGHT SHOES.

Short Bones.—*See* BONES, CLASSIFICATION OF.

Short Sight.—*See* MYOPIA.

Short Sight, Glasses for.—*See* SPECTACLES.

does not succeed the first time, we do not advise you to repeat the experiment; nor do we sanction the amateur in making any attempt at reducing this or other dislocations by pulling at, or extending the limb, as much anatomical skill is requisite to conduct such attempts in a proper way.

Reduction of dislocation of the shoulder-joint by means of placing the heel in the axilla is the method of reduction that is

most generally employed. The patient is placed in the recumbent position upon a couch or bed. The surgeon then seats himself beside him, and having taken off his boot, places his foot in the axilla of the dislocated shoulder, making it act as a fulcrum. He then draws the arm steadily downwards, when in most cases the reduction will be readily effected.

In Fig. 1 dislocation of the shoulder-joint is shown, the head of the humerus being in the axilla. The round appearance presented by the shoulder in the natural state is seen to be lost.

In Fig 2 is shown reduction of dislocation of the shoulder-joint by the knee in the

Shoulder, Dislocation of, Repetition of.—When the arm has been once dislocated, it is very liable to be dislocated again and again by any jerk of the elbow upwards, or even in the simple effort of putting on a coat. The person soon becomes well aware of the injury, and finding that he can neither get his elbow close to his side nor raise it to a level with his shoulder, is pretty sure that he has put his shoulder out, as he has done before. In general, the more frequently the bone is put out, the more readily is it put in if only managed the right way, and shortly after its occurrence.

A person who has repeatedly dislocated

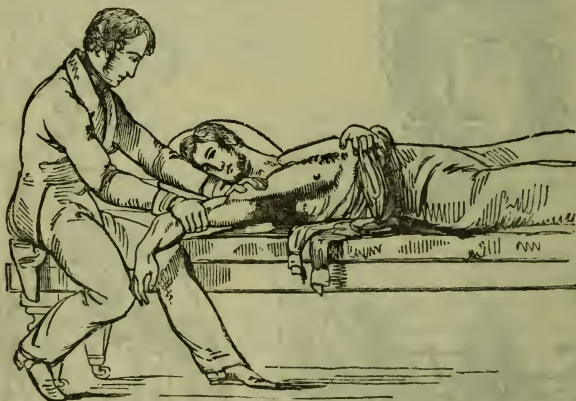


FIG. 3. REDUCTION OF DISLOCATION OF SHOULDER-JOINT.

axilla. The surgeon is represented standing by the patient's side, with his foot resting upon a chair, and his knee in the axilla. His knee thus acts as a fulcrum, and the surgeon endeavours, by bending down the arm and bringing it across his knee, to reduce the dislocation.

In Fig. 3 is shown reduction of dislocation of the shoulder joint by drawing the arm upwards. In this form of reduction, the surgeon steadies the acromion process with one hand, while he grasps the arm above the elbow with the other, and draws it up by the side of the head.

his shoulder may, if he have courage to bear a little pain for a few minutes, even manage himself to reduce it. If the accident has happened in the fields, and there be a five-barred gate at hand, all he has to do is to get his arm over the top rail, and having grasped the lowest rail he can reach, hold fast, and let his whole weight hang on the other side of the gate; if he then make some little attempt to change the position of his body, still letting his weight tell on the top of the gate, the bone will probably slip into its place, and the assistance of a surgeon be rendered unnecessary.

Shower-Bath.—This bath partakes of the nature of cold affusion, only it is not so severe. It may be employed either cold or tepid, the former acting more powerfully, and having a greater stimulating effect than the latter; but for those who are of a rather delicate habit of body the tepid shower-bath will answer best. The best time for taking this kind of bath is immediately on getting out of bed in the morning. Should the patient, however, not be able to stand the shock then, it should be postponed till an hour after breakfast, when the body will be better able to bear the shock and produce that state of reaction on which the utility of this kind of bath depends. Reaction after the employment of the shower-bath is greatly accelerated by friction with horse-hair or coarse flannel gloves previous to taking the bath. The friction should be kept up till the body feels comfortably warm.

Shower-Bath, Advantages of.—

"Although the shower-bath," says Dr. Graham, "does not cover the surface of the body so universally as the usual cold baths, this circumstance is rather favourable than otherwise, for those parts which the water has not touched feel the impression by sympathy almost as much as those in actual contact with it. Every drop of water becomes a partial cold bath in miniature, and thus a stronger impression is excited than by any other mode of bathing. The shower bath, for the following reasons, possesses advantages superior to most others:—
1. The sudden contact of the water, which in the common bath is only momentary, may here be prolonged, repeated, and modified at pleasure. 2. The head and breast, which are exposed to some inconvenience and danger in the common bath, are here effectually secured by receiving the first shock of the water; the blood is consequently impelled to the lower parts of the body, and the patient feels no obstruction in breathing or undulations of blood towards the head. 3. The heavy pressure on the body occasioned by the weight of the water,

and the free circulation of the blood in the parts touched by it, being, for some time at least, interrupted, is a favourable circumstance in certain instances. The shower-bath, on the contrary, descends in single drops, which are at once more stimulating and pleasant than the immersion into cold water, and it can be more readily procured and adapted to the circumstances of the patient." When this kind of bath is first resorted to, it should be used gently, and with water having some degree of warmth, so as not to make the shock too great; but as the individual becomes accustomed to it the degree of cold may be increased, and the water may be allowed to fall from a greater height, so as to make the shower heavier. As an additional precaution, it is recommended that the water should be allowed to fall on the neck and shoulders instead of on the head.

Shrimps.—Shrimps are generally considered easier of digestion than either crabs or lobsters, which is not saying much in their favour. They are more digestible and palatable when the hard skin or shell is removed.

Sick Children, Nursing of.—*See* NURSING OF SICK CHILDREN.

Sick Nursing.—The subject of sick nursing, till recently, was little thought of, and, even yet, its fundamental rules are but little understood. Any sort of qualification was considered good enough for those who chose to undertake the work; and yet, if we reflect for a moment upon the nature of that work, we shall not think thus lightly of it. All the best qualities, and all the finer feelings, that go to form the character of women are brought into exercise in discharging faithfully the arduous duties of the sick nurse; and when these are wanting, the work can in no true sense be done. The powers of endurance may be severely tested, the temper may be sorely tried, but she is but little fitted for the task who becomes impatient, or who gives way to anger. The

sick are selfish, and, to the strong, their little whims may appear ridiculous; but she who would fulfil the duty of sick-nurse aright must treat them at all times with thoughtful consideration. Happy would it be, indeed, if this subject formed part of every woman's education. How much easier would sickness become, how much shorter its duration, how much more bearable its pangs! The work of the physician would then be greatly lightened, his mind relieved of much anxiety, and the patient's recovery greatly hastened.

Sick Nursing as a Profession.—

The profession of certificated nurse is one which is open to none of the objections which make nearly all women recoil with disgust from the idea of having members of their sex educated for surgeons or physicians; and at the same time it is a profession for which they are eminently suited, and more especially so when possessed of the culture, gentleness, and pleasant manners of a gentlewoman. There cannot be a greater blunder than to suppose that the women of every family can do all that is required for a patient in case of sickness, under the doctor's orders. The nurse's work requires less ample and large knowledge than that of the physician, but it needs appropriate knowledge just as much; and it would be as reasonable to fancy that a father or brother could and ought to prescribe for a sufferer as that a mother, wife, or sister should necessarily be able properly to nurse him.

If knowledge were not wanting—clear apprehension of the doctor's orders, capacity to observe, appreciate, and report correctly a change of symptoms, intelligence to avoid serious mistakes, such as untrained nurses constantly commit—the very fact that they are so near and dear, so terribly interested in the result, deprives them of the calm self-possession and steady will essential to good nursing. A doctor prefers to call in other advice for his own family, and yet a doctor's duties are not half so delicate and trying as a nurse's. The con-

stant presence in the sick chamber, the fearful strain on the nerves produced by the combination of a demand for incessant intellectual vigilance, presence of mind, wakefulness, and physical energy, with a bitter, gnawing anxiety praying upon the heart and brain, render the task of the amateur nurse the heaviest that women can be called on to perform, and leave us no cause to wonder that, when no longer sustained by necessity of exertion, women so generally break down under its effects. A patient is better nursed by a professional, if she can be trusted to do her duty with professional zeal and earnestness equal to that of the doctor, and better cheered and refreshed by the visits of relatives who have not been worn out in spirit by watching and labour, and are not, therefore, struggling all the time to repress their feelings, and control their tendency to hysterical tears.

The private nurse needs much higher professional knowledge and aptitude than the hospital nurse. The latter sees the doctor at the bedside twice a day; she can call in the resident medical officer whenever there is a critical change; all she has to do is to be obedient and vigilant. But the private nurse sees the doctor generally once a day, and in many cases cannot send for him if a change takes place. She must be competent to act rather on the spirit than on the letter of his orders. A year's training is not sufficient for such a nurse; and she requires a higher theoretical instruction than the ordinary nurse. To profit by this, she must be originally a woman of education and intelligence, and this is the very class of women who, at present, are too apt to think that no profession but that of teaching is open to them, and that by accepting any other they would lose caste. But a first-class nurse, like Miss Nightingale or Miss Lees, holds a rank hardly inferior to that of a distinguished physician. A lady trained under one of these for three years or so, competent as she would be by that time to undertake the most difficult charges in her profession, would hold a position on which no woman could pretend to look down.

Sick Nursing, Milk in.—See MILK IN SICK NURSING.

Sick Persons, Dangerous Visits to.—See DANGEROUS VISITS TO SICK PERSONS.

Sick Room, The.—Notice of a few of those things which influence the condition of the sick, and which naturally come to be spoken about in connection with sick-nursing, will be found under the following heads, to which the reader is referred:—See CLEANLINESS, CONVALESCENCE, DEATH-BEDS, DIET DURING DISEASE AND CONVALESCENCE, FOOD, FURNITURE AND ARRANGEMENT OF SICK-ROOM, GOSSIP, LIGHT, NOTES FOR NURSES, OBSERVATION, PASSIVE EXERCISE FOR INVALIDS, RUBBING, SICK NURSING, SICK NURSING AS A PROFESSION, TEMPERATURE, TRANQUILLITY, VENTILATION.

Sickness arising from Irritable Condition of Stomach, Powder to Allay.—See POWDERS.

Sick-Room, Dress of Nurse in.—See DRESS OF NURSE IN SICK-ROOM.

Side, Pain in the.—See STITCH.

Siesta.—See NAP, OCCASIONAL.

Signs of Death.—When death is slow in its approach, the physical signs preserve a measure of uniformity which, in most cases, too plainly indicates the coming event. These have been well described by Mr. J. Bower Harrison, in his "Medical Aspects of Death":—"When the evidences of dissolution begin to manifest themselves, a general failure of the temperature, with a cold dew on the skin, may generally be considered as indicative that the scene is about to close. In many cases it is easy to recognise the fatal turn which diseases take by the alteration which the symptoms undergo. Where internal inflammations are about to issue in death, there is mostly a striking change in the expression of the face, and sometimes a curious shrinking of the body,

"The nose and lips are very characteristic in the dying. The lips become pale, the nostrils dilated and dark-looking, and the hairs about the lips seem more than usually apparent. The teeth look like pieces of ordinary bone, and the eyes seem to shadow through the eyelids, or are partially turned through the lids. The nails look dark and the ends of the fingers sodden. Finally, convulsive twitchings often show themselves in the face, with singular elevations of the eyebrows and staring of the eyes. A gaping attempt to breathe terminates the struggle. When coma is present, a mucous rattle is of fatal import; and, *à contrario*, when the lungs are affected, the supervention of coma is equally to be dreaded.

"When fluids, taken by the patient, flow back from his mouth, or fall heavily down his throat, as if poured into an ordinary tube, death is soon to be expected.

"In young children, a curious playing with the bedclothes often attends fatal affections of the brain. I remember a little child, who had her handkerchief in her hand, which she spread out repeatedly with apparent ease, and in a fantastic manner that would have been amusing but for the fatal import. The picking of bedclothes and catching of the hands, as if at imaginary objects, are well known as terrible indications."

Chomel remarks, as of serious presage, the automatic manner in which a patient will unceasingly draw his hand to his side, in spite of the efforts of the physician to feel his pulse.

The signs of death are not, however, always very marked; for when death arises in advanced and feeble age, the vital powers are so easily depressed, and the heart's action brought to a stand in so imperceptible a manner, that it is customary to speak of it as a quiet sleep.

Signs of Disease in Children.—See DISEASE, SIGNS OF, IN CHILDREN.

Simple Rice Pudding.—Add two tablespoonfuls of rice to a pint and a half of

milk, and let it simmer till the rice is soft. Take now two eggs, whites and yolks, beat them up with half an ounce of sugar, and add this to the preparation. Allow it to bake for three-quarters of an hour in an oven.

Sinapisms (*Gr. sinapi*, mustard).—

These being of frequent use in domestic medicine, a few words in regard to them are necessary here. As mustard is frequently adulterated, and its action in consequence impeded, we should endeavour to obtain only that whose quality is undoubted; and, to attain this object, it had better be procured from the chemist. The goodness of the mustard may be judged of roughly by placing a little upon the tongue and perceiving the nip imparted to it. The ordinary mustard poultice is made by sprinkling the surface of a linseed meal, or other poultice, with mustard, and covering the surface with muslin to retain the mustard in place. Should a poultice of mustard alone be prepared, it ought to be made with *tepid* water, as this develops the active principle of the mustard best. It should then be spread upon a piece of rag and applied to the part.

The length of time which a sinapism should be kept on varies, some skins being much more sensitive to its action than others. In the case of children and those adults who are delicate and sensitive, a period of ten minutes will generally suffice for its application; in others it may be kept on for a quarter or half an hour. In those who are insensible, care must be taken not to allow the sinapism to remain on longer than this, as ulceration or gangrene may result. Recently, instead of the ordinary sinapism, mustard leaves have been used, and have been found very effectual in their application. They are exceedingly convenient, and can be cut to any shape or size that may be required.—See also MUSTARD PLASTER.

Singing and Speaking.—To appreciate this position in the subject before us, it will be advisable to consider the fac-

tors of natural voice and speech; and then the injurious effects of departure from it can be properly estimated. The first point to consider is that of respiration. This important function must not be interfered with during speech, and should be so managed as to be performed naturally or without conscious effort. It is painful to see the laboured phases of inspiration, or taking breath, which are exhibited by many female vocalists, whose manner of dress makes it more conspicuous; and still more painful to witness it in a preacher, whose dress and surplice even do not hide it from the observation of his auditors.

It is well known that the thorax, or chest, expands somewhat in inspiration, or taking breath in, and contracts again in expiration, or giving breath out. Now, a little observation will show that in ordinary tranquil inspiration the soft parts below the chest become bulged forward, in consequence of the descent of the *diaphragm*, a soft partition between the chest and the abdomen. In addition to this, the ribs at the lower portion of the chest expand slightly, but the upper ribs remain practically undisturbed. This is what is termed the *abdominal* or *diaphragmatic type of respiration* shown in Fig. 1, because the abdomen and the diaphragm are the principal factors of the process. As the abdomen expands, the diaphragm becomes depressed, increasing the capacity of the chest vertically, and the air passes readily into the expanded lungs. In females, the ribs participate more freely in the expansion of the chest than in men, the upper ribs particularly. If a deep inspiration is favoured by a voluntary continuance of the action of the abdomen and diaphragm, it is found that the action of the ribs becomes augmented, and that the entire series of ribs enter into the movement progressively from below upwards, still further increasing the capacity of the chest, and thus drawing a larger amount of air into it. This is what is termed the *lateral, costal, or rib type of respiration*. If a still further effort be made to draw air into the chest, or fill the lungs to their utmost capacity, the collar-

bones rise after the ribs have all become expanded, and the upper portion of the breast-bone rises as shown in Fig. 2. This is the clavicular, or collar-bone type of respiration. Indeed, if the effort is pushed to its uttermost, then the bones of the spinal column, and, as a matter of course, the skull on top of it, rises also, so as to increase the capacity of the chest to its extreme limit, while at the same time the abdominal wall sinks inward towards the spinal column. If

maintainance, and utilizes only the upper portion of the volume of air upon vocal organs in a constrained position. The best effects of elocution and singing are produced from a full chest of air inspired according to the natural or abdominal type.

Now, the trouble with many public singers and speakers is that under a mistaken conviction that it is important to fill the lungs as much as possible at the commencement of a sentence or phrase, they habitually



FIG. 1.—ABDOMINAL, DIAPHRAGMATIC, OR NATURAL TYPE OF RESPIRATION.

The figure has been reduced from a photograph. The dotted transverse lines represent the positions of the diaphragm; the heavier one, its position after expiration; the lighter one, in inspiration.



FIG. 2.—CLAVICULAR TYPE OF RESPIRATION, SUCCEEDING ABDOMINAL AND COSTAL TYPES IN SUCCESSION. A FORCED AND UNNATURAL TYPE.



FIG. 3.—DIAGRAM OF DEEP ABDOMINAL AND OF DEEP CLAVICULAR RESPIRATION CONTRACTED.

The heavy, dotted outline exhibits the abdominal type, and the light dotted outline the clavicular type.

the respiration begins with the elevation of the clavicle and the distention of the upper ribs, the retraction of the abdomen is quite marked. The contrast between the outlines of deep abdominal respiration and deep clavicular respiration in the male subject is well shown in Fig. 3. The fixed abdominal inspiration can be maintained for the requisite number of seconds with comparatively little effort, and utilizes the entire volume of air in the lungs upon vocal organs in a natural position; while the forced clavicular type requires considerable effort for its

adopt the clavicular type of respiration instead of the abdominal type, which is the natural one for ordinary use, to be supplemented by the costal and clavicular type only under rare occasions for momentary use in the production of certain effects, or under the influence of certain emotions. The consequence of this vicious mode of respiration is that by a powerful muscular effort of the auxiliary muscles of respiration the thorax becomes fixed in a constrained position, and likewise the organ of the voice itself, and the muscles of the throat, which

should be in a relaxed condition, become more or less fixed also, so that additional muscular effort is requisite to produce the necessary vocal sounds. This is not only fatiguing to the individual, but it produces a constrained voice, disagreeable to the ear of a cultivated hearer, while the efforts necessary to keep speaking divert the powers of the speaker from gliding into many natural embellishments, suitable to the occasion or to the subject.

Another effect of taking too deep and

inspirations necessary, and thus the pernicious process is repeated.

In addition to this, the constrained position of the vocal organs prevents due play of the muscles of the vocal bands, alters their physical relation to the impact of the escaping currents of expired air, and thus enfeebles the natural tone of the voice, and renders it less sonorous and less susceptible of modulations. In consequence of this, the sounds are proportionately weak, shrill, and monotonous. In taking breath, then, dur-

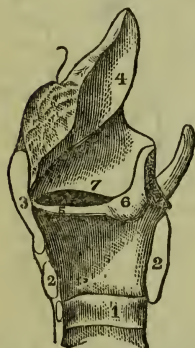


FIG. 4.—INTERIOR VIEW OF RIGHT HALF OF THE HUMAN LARYNX.

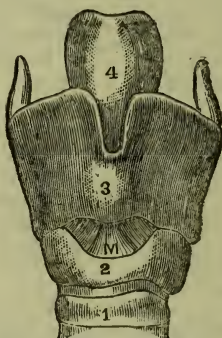


FIG. 5.—A FRONT VIEW OF THE EXTERIOR OF THE CARTILAGES OF THE FEMALE HUMAN LARYNX.

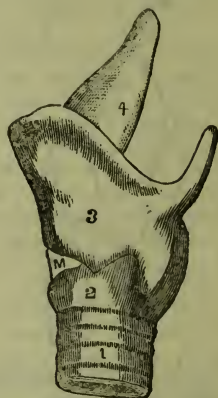


FIG. 6.—SIDE VIEW OF THE EXTERIOR OF THE CARTILAGES OF THE HUMAN LARYNX.

strained an inspiration is that some of the breath is often given out again before the voice is produced, and thus absolutely rendered ineffective. The voice is produced only during an expiration, and every particle of expired air should be utilized, in order to accomplish the best effect with least effort. But if a strained inspiration has been made, there is either a painful stop before speaking, or else some of the air is allowed to escape to relieve the uncomfortable sensation in the chest before the vocal muscles can be brought into proper position. In this manner the whole of the air painfully inspired is not used after all. The escape of air without utilization in voice renders frequent

ing exercise of the voice, the habit should be cultivated of breathing by the abdominal method instead of elevating the upper ribs, collar-bone, and breast-bone. This supplemental method will follow the other naturally, and without visible effort, when required in the emotion of a special and appropriate occasion.

In Fig. 4 is shown—1, Upper ring of the windpipe; 2, 2, cricoid cartilage; 3, thyroid cartilage; 4, epiglottis; 5, vocal band (vocal cord); 6, arytenoid cartilage; 7, ventricular band (so-called false vocal cord).

The parts in Fig. 5 are:—1, Upper ring of the windpipe; 2, cricoid, or ring-like cartilage, the base of the larynx; 3, thyroid, or

shield-like cartilage (the figure 3 is on the Adam's apple); 4, epiglottis; M, membrane uniting the cricoid and the thyroid cartilages.

The parts in Fig. 6 are:—1, windpipe; 2, cricoid cartilage; 3, thyroid cartilage; 4, epiglottis; M, membrane uniting cricoid and thyroid cartilages.

Site for House, Choice of.—If a man sets to work to build or select for himself a house on sound principles, the first thing he has to satisfy himself about is the site on which it is to be, or has been, built. We do not, of course, refer to beauty of situation, which will always speak for itself, but rather with regard to the nature of the soil. There are two kinds of sites—the natural and the artificial. Artificial foundations, except they be carefully prepared, are to be strenuously avoided. It is quite true that in a damp soil a good sound, artificial foundation is a very great improvement; but then it must be carefully prepared, not made of materials heaped together at random.

As far as site is concerned, the possibility of good drainage ought to be carefully kept in view. A house with damp foundations is an artificial hotbed for rheumatism, with all its dangers to health and life; and so a situation below the high-water mark of rivers is to be avoided.

A point much studied in selecting a building site, and yet often on wholly erroneous principles, is the nature of the soil. Thus a gravelly soil is supposed to be far superior to a clayey soil on which to build a house; and so it is, other things being equal, which is precisely what, as a rule, they are not. A gravelly soil is good or not, according to the nature of the subsoil, and the direction of the watershed. If there is a considerable depth of sand or gravel, and a distinct watershed away from it, no better site could be selected; on the other hand, it is quite possible for a gravelly soil to be the very worst of sites. If, as very often happens, the subsoil be clay, the water which falls on the gravel will sink through till it reaches the clay, and no further, for the clay is not per-

meable by water. Having reached the level, it must flow away as it would from a clay surface, only percolating through the soil instead of running above it, until it reaches the lowest level in a stream or otherwise. But, if it does not flow away, if there is no watershed, it will accumulate in the soil, just as it might in a reservoir on its surface, and, rising higher and higher, at length reach the foundation of the house and sap the timbers of its flooring.

Such a condition of things is most likely to occur in the following circumstances:—Suppose, by the agency of the great forces at the disposal of nature, a huge basin has been hollowed out of the clay and subsequently filled with gravel. This, we know, not unfrequently occurs. Out of this basin there is no escape for the ground-water, until it topples over the clay banks of the basin, and so it rises and falls according to the season. Such a gravelly soil would be the very worst site for building purposes which it would be possible to select. But if now in this sea of gravel there was a little island of clay, that would be subject to no such variations in the rise and fall of its ground water. When rain fell, it would run off its surface into the gravel beyond; its own ground water would be invariable. If, therefore, underneath the gravel there is a watershed which will allow of the free escape of the ground-water, no site could be drier or healthier; if not, no site could be worse.

The nature of the ground-site having been settled, the next thing, perhaps, especially in this country, is to consider the direction and nature of the prevailing winds. If possible, the house should have its greatest exposure to the direction whence come the driest winds, and which has the best exposure to the sun.

Of course it is in reference to England that these remarks are made. Thus, in many parts along the east coast, a direct frontage to the north-east would be unbearable at certain seasons; so, too, on the south coast, very often a south-west exposure, though pleasant at one time of the year, is far from being so at another. Each district

and each situation must be considered by itself; protection from the worst winds and exposure to the most favourable being sought in each case. This, perhaps, is hardly a proper place to speak of the kind of trees which should be planted round a house with a view to protection, but such should be carefully selected with a view to shade in summer and protection in winter. It should not be left to haphazard.

As regards beauty of situation, most people will be inclined to agree with an American writer, who points out that there is nothing people talk so much and care so little about as the situation of the house they dwell in. To have a good or a fine view, as it is termed, might be supposed, to hear the universal expression of sentiment on the subject, the chief end of living. An extended prospect of the beauties of nature, the sight of so many distant mountains, so much water, such an expanse of land surface, with its varieties of hill, dale, grove and field, would seem to be indispensable to the happiness of the great majority of mankind. It is a fact, however, that most persons in their daily life are quite indifferent to all the beauties of natural scenery. Those before whom they are always spread, and who need not turn to look upon them, having eyes, see them not, and those who are shut out from their view by a dead wall, care not, however easily it may be passed, to go beyond in search of a glance at them.

With all this real indifference to the beauties of nature, there is an affected admiration of them. That this admiration is not a genuine and spontaneous feeling is apparent from the forced attention given to the supposed attractions of natural scenery when the occasion seems to require it, and the general want of appreciation of all ideal representations of them by art. There is nothing to which the ordinary ear and eye is so shut as to descriptive poetry and landscape painting.

It is not to be understood that because the beauties of nature are so little appreciated people should studiously avoid them.

They may exercise their beneficent influences unconsciously to the beholder, and we therefore would encourage even the most insensible to surround themselves, if they possess the power, with all the charms of natural scenery. At the same time, it is hardly worth while to sacrifice more substantial advantages to any sentimental fancy for the beautiful. Our purpose in making these remarks is to point out that it is better to look to what is conducive to health and comfort than to the gratification of taste and the enjoyment of nature.

Sitting-Room.—The ordinary sitting-room of the family may well be the largest and best-situated apartment of the house, since it is the rendezvous of all the inmates of the house during periods of leisure and enjoyment, and at times is the place of reception for a greater or less number of visitors. Extent of space as well as freedom of ventilation is, therefore, especially necessary to the room which must be more frequently thronged than any other in the house.

Size of Brain.—See HUMAN BRAIN, SIZE AND WEIGHT OF.

Size of Hair.—See HAIR, DIAMETER OF.

Skeleton, The (*Gr. skeletos*, dried; from *skello*, I make dry).—The word skeleton signifies literally the dry or hard parts of the body. When used in a limited sense, it is applied merely to the bones; but when used in a wider and more philosophic sense, it includes not only the bones but the cartilage and fibrous membranes which complete the framework of the body.

The skeleton of a full-grown human being consists of two hundred distinct bones, exclusive of the little bones in the internal ear. They are thus distributed:—

The Spine	26 bones.
Skull	8 „
Face	14 „
Ribs and breast bone . .	26 „
Upper extremities . . .	64 „
Lower extremities . . .	62 „

The actual number of distinct bones varies at different periods of life, many bones which are separate in youth becoming joined together in old age. The names of the principal bones shown in Fig. 1 are as follows:—

a, the frontal bone; *b*, the orbit; *c*, the

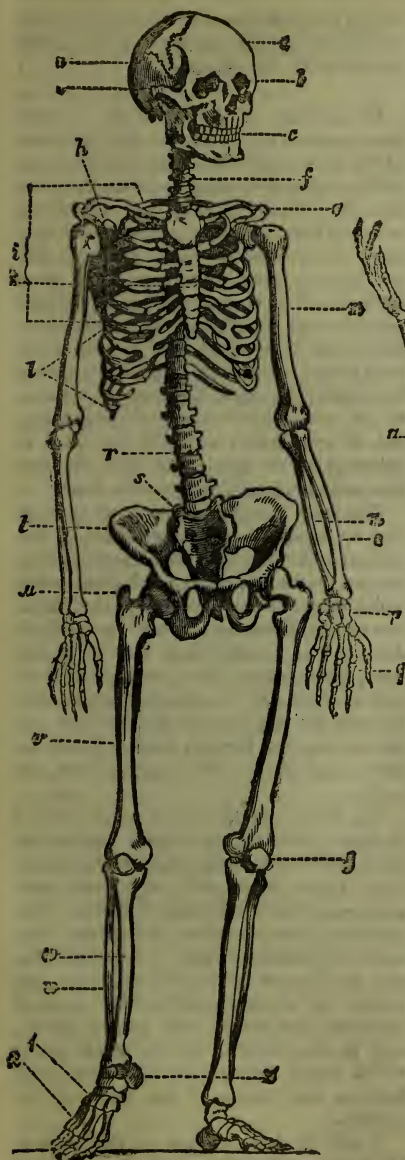


FIG. 1.—HUMAN SKELETON (Front View).

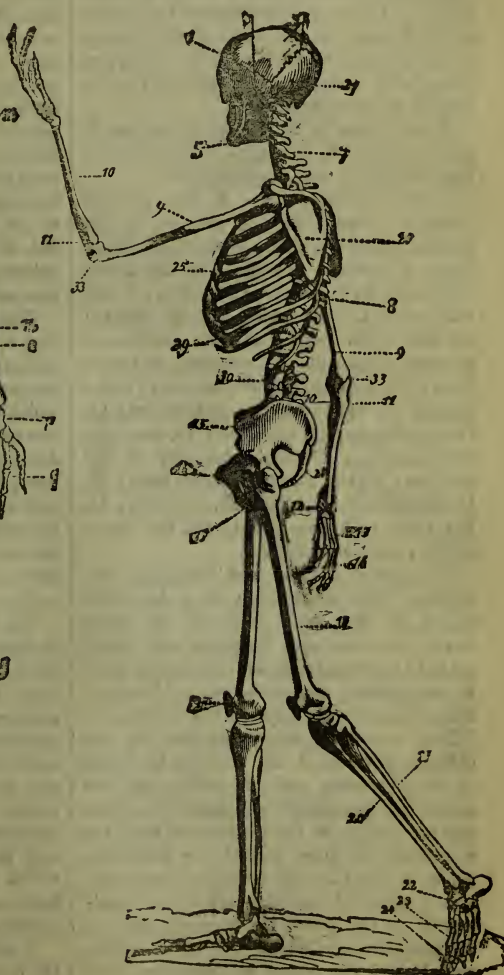


FIG. 2.—HUMAN SKELETON (Side View).

teeth; *d*, the temporo-parietal suture; *e*, zygomatic arch; *f*, the cervical vertebræ; *g*, the shoulder girdle; *h*, the coracoid process of scapula; *k*, the sternum, or breast bone; *l*, the lower ribs; *m*, the humerus; *n*, the ulna; *o*, the radius; *p*, the carpus, or wrist; *q*, the fingers; *r*, the lumbar vertebræ; *s*, the sacrum; *t*, the crest of the ilium; *u*, the great trochanter of the femur, or thigh bone; *v*, the shaft of the femur; *w*, the tibia, or shin bone; *x*, the fibula; *y*, the patella, or knee pan; *z*, the heel; 1, the tarsus; 2, the metatarsus.

A side view of the human skeleton is given in Fig. 2; the names of the bones there exhibited being as follows:—

1, The frontal bone; 2, the parietal suture; 3, the lambdoidal suture; 4, the occipital bone; 5, the symphysis menti, or chin; 6, cervical vertebræ; 8, the dorsal vertebræ; 30, the lumbar vertebræ; 9, the humerus; 10, the ulna; 11, the radius; 33, the elbow joint; 26, the scapula, or shoulder-blade; 25, the sternum, or breast bone; 29, the ribs; 28, the sacrum; 12, the carpus, or wrist; 13, the metacarpus; 14, the phalanges; 15, the ilium; 16, the symphysis pubis; 17, the tuberosity of the ischium; 18, the femur, or thigh bone; 19, the patella, or knee pan; 20, the tibia; 21, the fibula; 22, the tarsus; 23, the metatarsus; 24, the phalanges.

“It cannot truly be said,” remarks one writer, “that a skeleton is a beautiful object, in the usual sense of the word beauty, but the term beauty is well applicable to the adaptation of the various parts to one another, and to the manner in which they subserve the object of their existence. When, moreover, the connection of the different portions of the skeleton by means of the ligaments, and the action and the mode of action, simple and combined, of the various muscles of the machine at large are considered, when we regard the protection given by the bones to important parts contained within the cavities and to the blood-vessels in the limbs, the strength and yet comparative lightness of the whole fabric, and, lastly, the power of reparation after

injury, the word beautiful in another sense is that which really expresses the admirable perfection of the structure.”

Skeleton, Erectness of. — The erect position of the human skeleton is one of the most noticeable of the bodily characteristics of man as compared with the lower animals. He is, indeed, the only living creature that can walk or stand erect, *i.e.*, with the axis of the spine vertical; with the hip and knee-joints capable of being fully extended, so that the leg is brought into line with the thigh; with the foot so planted on the ground that it rests on the heel behind and on the roots of the toes in front, with the upper limbs so arranged as to act, not as instruments of progression, but of prehension; and with the head so balanced on the top of the spine that the face and eyes look directly to the front.

This erect position is in a great measure due to combined muscular action. The natural architecture of the skeleton adjusts its own centre of gravity. All those joints which transmit weight to the ground lie in one vertical plane, and such a line would be described as passing from the top of the head, through the joints, between the head and first bone of the spine, through that between the last bone of the vertebræ and the sacrum, and through those between the sacrum and haunch bone, the hip, knee, and ankle.

The spine consisting of a great number of bones, peculiarly articulated together by interposed elastic cushions, increases in size from above downwards, and, moreover, possesses several well-marked curves. The object of these cushions and curves is to receive the shock of sudden blows and falls, and to disperse their effects; again, the curves are arranged alternately, so as to distribute the weight with greater advantage to the centre of gravity of the body, which passes through all the curves, and falls on the centre of the base of the column.

It will be observed that all the bones of the limbs are slightly curved, thus assisting

in the individual and mutual transmission of shock. The pelvis (sacrum, coccyx and haunch bones) is very broad and strong in man, and the plane of its arch is in such a direction that the weight is transmitted vertically from the sacrum to the heads of the thigh bones. The thigh bone being curved inwards, allows of the weight of the body being brought under the pelvis and transmitted to the broad, expanded ends of the bones forming the knee-joint. The foot, in its turn, consists of an arch, or rather double arch, which receives the transmitted weight at its crown directly through the leg bones. Thus it will be seen that the upper limbs take no part in the maintenance of this natural upright position.

Skim-milk Cheese.—This is to be met with of various qualities, the worst of them being very indigestible. These qualities depend chiefly on the time the milk has been allowed to stand. If it has stood so long as to be deprived altogether of the butyraceous matter, it is very poor stuff.

Skim-milk cheese used to be made in very large quantities in Suffolk (being known by the name of "Suffolk bang"), where at one time it had such an unenviable reputation that it was asserted it used to be chopped up with a hatchet instead of being cut with a knife; or, if a man wanted a bit of stick to fasten up a gate with, and could not find a piece of wood handy, he would cut a wedge off his luncheon cheese for the purpose and make use of it. In old times, when the farm labourers lived partially or wholly in the house with the farmer, the quality of the cheese used often to become the bone of contention, being at times too hard to bite; so that it used humorously to be said the labourers in that part of the country, having to "bolt" their cheese in blocks, by a long course of practice had acquired *square throats*.

"Taking cheese," says Dr. Lankester, in his valuable work "On Food," "at a price of from 7*d.* to 10*d.* per pound, the question arises as to whether it is an economical

article of food. It contains that form of flesh-forming matter which is furnished by Providence to young children and the young of all the higher animals; and in the form in which it is thus supplied there is no doubt that it is very nutritious. But when it is separated, the question of its digestibility must be considered. Where cheese is digested, there is nothing which contains so large a quantity of flesh-forming matter; but then you must not go away and think we can live on cheese. There are persons who like it, and have taken it for a time, but they have been arrested in their course by its indigestibility. But the hard-working man, who labours with his muscles from hour to hour in the open air, with his stomach in the best possible condition to digest his food, rather invests his little money in cheese than in meat, for cheese contains nearly twice the quantity of nutritive matter that you get in cooked meat."

Skin (*A.-S.* *scin*; *Icelandic* *skinn*).—The skin is the largest single excretory organ of the body, and upon the proper performance of its functions depends, to a large degree, the health of the individual. The skin is generally spoken of as simply a covering for the rest of the body, an outer garment of tissue which serves to enclose and protect the parts within, to give symmetry, shape, and beauty to the human form. While it fulfils these ends in a marvellously perfect manner, it has, however, functions which are peculiar to itself.

The structure of the skin, like that of every other part of the animal frame, displays the most striking proofs of the transcendent wisdom and beneficence of its great Creator.

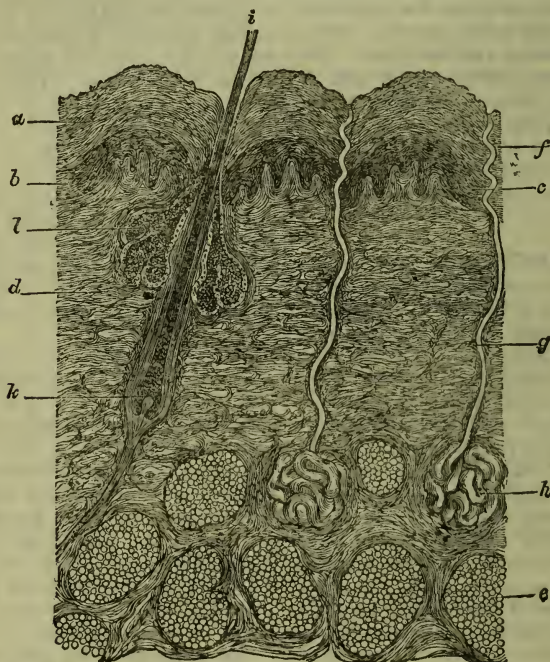
A section perpendicularly through the healthy skin is shown in the accompanying illustration, in which *a* is the epidermis, or scarf-skin; *b*, rete mucosum, or rete Malpighii; *c*, papillary layer; *d*, derma, corium, or true skin; *e*, panniculus adiposus, or fatty tissue; *f*, *g*, *h*, sweat gland and duct; *i*, *k*, hair, with its follicle and papilla; *l*, sebaceous gland.

Skin, Blood Supply of.—See
BLOOD SUPPLY OF SKIN.

Skin, Colour of.—The colour of the skin depends upon the outer or epidermal layer. If it were entirely removed, the surface would be of an almost blood-red

Skin, Diet in Diseases of the.—

The question is continually asked the physician whether it makes any difference what the patient eats or drinks who is affected with this or that skin disease, and the opinions given are often as numerous as the physicians giving them, and are not in-



SECTION PERPENDICULARLY THROUGH THE HEALTHY SKIN.

colour, owing to the abundant blood-vessels found everywhere in the corium. Where the epidermis is thickest, as upon the palms and soles, the red is almost entirely lost, and the skin has a yellowish grey tint; where it is thinner, it is of the well-known pinkish flesh colour; and when a part becomes unusually flushed with blood, as in inflammation, and also in blushing, the red colour predominates, the filled blood-vessels showing through the epidermis.

frequently quite contradictory. Many are based on theory, many on popular opinion, which has sanctioned this and decried that article of food or drink, and patients are often at a loss to know what to do. It cannot be doubted that what is eaten and drunk can and does affect both skin and other diseases; and while we are not yet in a position to determine with perfect accuracy all that might be desired, we shall endeavour to make the subject as clear as possible from

practical experience. Diet is of course of varying importance in the different affections of the skin, and some might claim that in purely local ones, such as ring-worm, it is of no consequence. But all diseases indicate debility, and even those depending on local causes may demand constitutional, dietetic, and hygienic treatment; even as moss will not grow on the bark of a perfectly healthy tree in rich soil and with plenty of sunlight. In some diseases, as, for instance, nettle-rash, diet is all-important, for the very article that produced it may be indulged in and render the disease incurable. Certain chronic skin diseases also depend upon erroneous eating in many ways.

The fermented liquors, ale, beer, wine, and cider, are very frequent causes of skin diseases, and of their continuance, and must be avoided by those subject to them. A return to their use is frequently followed by a relapse of the disease.

A healthy appetite and good common sense are undoubtedly the best guide in the matter of diet; but unfortunately every one does not possess one, much less both of these; and the refinements of civilization add greatly to the temptation of over-eating and wrong eating as they do to many other temptations.

The infant, when over-fed by the indulgence of the mother whenever it cries, rejects its milk by a natural process, and is saved much sickness thereby. The Chinese gourmand is said to take an emetic that he may again gratify the taste of eating, and the Roman epicure frequently relieved his stomach by artificial production of retching in order to go on eating. But the refinement of to-day rejects this latter method of getting rid of the burden, and takes the "dinner pill," or the aperient mineral water, to carry off that which should never have entered the stomach. The result of this over-eating is that the organs of digestion are able to do their duty but in part; the mass of partly digested food is hurried along; the blood absorbs the products of imperfect digestion; the organs cannot get

rid of the waste matter already circulating in it. As a consequence, we have sick-headaches, biliousness, and skin diseases. Medicine is taken, the organs whipped into action, the surplus carried off; there is some relief; the organs rest from their extra work; the full diet is maintained; and the process is repeated again and again.

Salted meats and salted fish are popularly supposed to act prejudicially in skin diseases, and rightly so. They should be avoided in these affections, as also pickles, olives, rich salads, and the like: likewise stimulating sauces, pepper, etc. There is, however, no objection to acids in most skin affections, and a certain amount of vinegar is often beneficial. The only exception to this is, perhaps, in the case of nettle-rash.

A very great error is often made in the amount of liquid consumed during eating. This is especially true of large amounts of tea, which we have repeatedly seen to provoke skin diseases. There is no objection generally to the use of a small amount of coffee once daily and tea once daily. But many persons consume very much water with their meals. This should be avoided, and as little as possible drunk. Nor should a large amount, as a goblet full, be taken directly after eating; for the operation is the same, namely, to chill the stomach and arrest digestion. Water should be avoided as largely as possible until at least two hours after eating. Sometimes a cup of very hot water taken a quarter to half an hour before meals will take away the craving for water, and greatly benefit any existing indigestion.

Much more could be said on this subject, but space forbids. Much the same rules which apply to good and healthy living are applicable to those affected with skin diseases. The avoidance of all articles and ways which produce indigestion will assist in curing disease of the skin.

Rapid eating and imperfect chewing are very fertile causes of trouble, and should be attended to. The process of digestion begins in the mouth, and unless the food is properly chewed and mixed with saliva (which latter produces certain digestive changes in it),

the other organs cannot do their work properly.

Skin, Diet in Diseases of the, Hunt on.—On this subject a few remarks may be quoted from Mr. Thomas Hunt's "Diseases of the Skin," a work which should be consulted by all sufferers from skin complaints:—"Is there any particular diet," says Mr. Hunt, "which will prevent diseases of the skin? This is a question which our patients often put to us, and a very reasonable one too. But it is a question which scarcely admits of a specific answer: that is to say, the answer must depend upon the nature of the case. When patients adopt a code of diet suggested by their own medical views, they generally err. Women who have eruptions in the face are apt to adopt too low a diet, with an idea that it is 'cooling,' and will, therefore, relieve the heat and redness of the skin: whereas the disease itself may depend on debility, and may require ample nourishment, or even stimulants, for its removal. There are other cases in which the eruption is not red, and the patient, imagining that it depends on 'poverty of blood,' may have indulged indiscreetly, and perhaps injuriously, in a rich diet. The pulse is sometimes an excellent guide in these cases. But, as a general rule, severe cases of scaly, papular, and vesicular disease (such as lepra, lichen, and eczema) require a low diet and cooling regimen; while pustular, erythematous, and bulbous disorders ordinarily require a full diet. But there are exceptions, and these can only be diagnosed by the symptoms which indicate the state of the general system.

"But, apart from these two qualities of diet (the full and sparing), are there no articles of diet which ought to be avoided in all skin diseases? Certainly the writer knows of none. There may be exceptional cases; but, as a general rule, I hold it to be a presumption to prescribe any particular article of diet. The instinct of each individual patient will, if implicitly trusted, almost infallibly guide him, both as to the

quality and quantity of the diet best suited to his case, both in health and disease. He must be a much wiser man than the author who can go beyond this. We hear much of plain food, simple food, mutton and beef, etc. If a man had been fitted by Nature for plain and simple food, and for mutton and beef exclusively, for what purpose are we provided with such a host of dainties, animal and vegetable—fish, flesh, fowl, fruit, seed, root, leaf, stem, etc.—which our instinct has selected from every class, order, genus, and species of living beings? Whence that taste for an unceasing variety of food, that gusto for every form of culinary preparation, that longing for hot drinks in winter, cold acidulated beverages in summer, fruit in autumn, salad in spring, and variety at all times—to say nothing of certain longings in special forms and stages of disease? All these are as natural as the love of rest after fatigue; and the moderate indulgence of these appetites is necessary, if not for health, at least for the full development of physical and intellectual power."

Skin, Diseases of the.—It will be useful here to give the reader a general idea of the way in which the skin becomes diseased and a sketch of the more prominent affections, and their means of recognition and prevention as far as possible, together with home remedies and measures; for their actual treatment must always be entrusted to a physician.

First may be mentioned some of the popular ideas in regard to these affections, with criticisms upon them.

Diseases of the skin are frequently, if not generally, looked upon as loathsome; and many fear to touch them lest they should contract the disease. In regard to this, it may be stated that there are only two or three out of the hundred which are contagious, and that not one case of skin disease in fifty could give the disease to another person. They are also regarded as indicative of something evil, of which the owner should be greatly ashamed; and any erup-

tion on the skin always subjects the bearer to a certain amount of suspicion that something was certainly wrong either on the part of the sufferer or his ancestors. In answer to this, we may say that the skin is subject to many diseases of whose origin the patient and his progenitors are quite as innocent as is the sufferer from a common cold, a pneumonia, or a fracture. A very small portion of the eruptions will have any connection with syphilis.

Again, many suppose and intimate that the cutaneous disease is an outward expression of some poison which thus seeks exit from the system; and that if it is only allowed to work itself off through some eruption, all will be well. It is needless to do more than to deny all such crude dogmas, and to assert plainly that there is no scientific ground whatever for such assumptions; and also that there is no more mystery in diseases of the skin than in those of any other organ.

As a variety of this form of popular thought, we have also the expression of "bad blood" as a cause of skin diseases, and many complain that their "blood is in a dreadful state," adducing as a proof the eruption on the skin. Now, nothing or next to nothing, is definitely known in regard to the condition of the blood in disease, beyond a comparatively few well-established facts; and chemical and microscopical study fail to show that there is "bad blood" in any of the diseases of the skin. It is, however, true that imperfect digestion has much to do with some skin diseases, and that internal remedies are necessary in very many of them arising from constitutional conditions; but it is equally true that certain other skin diseases are local in origin, and have nothing to do with the blood.

In consequence of the prevailing idea that any disease of the skin must be the result of some internal ferment, the external manifestation of "bad blood" seeking to gain exit, we have the dangerous and troublesome opinion, very prevalent, that it is not safe to cure eruptions on the skin, lest the dis-

ease should fly to some other part of the system; and one hears continually the fear expressed lest the disease should be "driven in," or lest it should "strike in."

Now, this fear rests on absolutely no grounds whatever, either scientific or practical, as may be abundantly demonstrated. The authorities are entirely agreed on this matter, and the strongest confirmation of it is found in Vienna, where the treatment of skin diseases is almost entirely by means of local remedies; and those who know most about it insist positively that no harm has ever come, within their experience, from the cure of cutaneous diseases.

As examples of the varieties of diseases of the skin, we may state that certain ones are caused by the growth of vegetable parasites, like a mould, on and in the skin, and others are due to the presence of animal parasites, as the itch or scabies.

Then there is a group of diseases whose seat is in the glands of the skin; acne, or the pimples which occur on the face of young people, being located in the sebaceous glands; while certain disorders of the sweat glands are also recognised.

Next we have a class which are called "neurotic affections," because they are due to a nervous cause, such as shingles (or herpes zoster), pruritis, etc.

The exanthemata embrace a number of contagious, eruptive, febrile diseases, as measles, scarlet fever, small-pox, etc.

We have, then, a large group of diseases which have so much inflammatory element that they are called exudative or inflammatory affections, the most prominent of these being eczema (or "salt rheum"), other members of the class being erythema, urticaria (or "nettle-rash"), boils, etc. In this fifth class are grouped thirty-one distinct diseases.

Another group is formed by a few diseases which are characterized by hæmorrhage into the skin, as purpura and scurvy.

Then there are others known as hypertrophic affections, because there is hypertrophy, or increase of some of the elements of the skin. Such are ichthyosis (or fish-

skin disease), warts, elephant leg, and seventeen others.

The next class is composed of atrophic affections, where there is atrophy, or loss of some of the elements, such as alopecia (or baldness).

Lastly, we have a variety of skin diseases caused by a new formation, or new growth, in the skin, under which head come lupus, cancer, syphilis, leprosy, etc.

Among diseases of the skin are reckoned—Acne, Baldness, Corns, Eczema, Erythema, Freckles, Herpes, Lichen, Nævus, Phthiriasis, Prickly Heat, Pruritus, Psoriasis, Scabies, Seborrhœa, Sunburn, Syphilis, Tinea, Urticaria, Warts, which see.

Skin, Divisions of the.—The skin may be roughly divided into two general portions—the deeper, called the *corium*, *cutis vera*, true skin, or *derma*; and the outer, cuticle, scarf skin, or *epidermis*. For a description in detail of each of these, see CORIUM and EPIDERMIS.

Skin, Effect of Mental Emotions on.—Some mental emotions operate upon the skin, and impair its functions much in the same way as cold. The depressing passions generally, by diminishing the afflux of arterial blood, render the skin pale, and at the same time diminish perspiration and nervous action; while rage and other violent passions, by augmenting the afflux of blood, elevate the temperature of the surface, and give rise to the red flush, fulness, and tension so characteristic of excitement. Sometimes, indeed, the effect of mental emotions on the skin is so great as to induce disease. In speaking of impetigo, Dr. Bateman alludes to two gentlemen in whom the eruption arose from “great alarm and agitation of mind”; and adds that he “witnessed some time ago the extraordinary influence of mental alarm on the cutaneous circulation, in a poor woman who became a patient of the Public Dispensary. A sudden universal anasarca (dropsy under the skin) followed, in one night, the shock occasioned by the loss of

a small sum of money, which was all she possessed.” Facts like these establish a connection between the brain and nervous system and the skin, which it is important not to overlook.

Skin, Hygiene in Diseases of the.—Hygiene embraces many things which can be only mentioned here as suggestive of thought. Exercise, rest, sleep, the care of the skin, as in bathing, the air we breathe, the sleeping apartment, the dryness of the living room, sunlight, etc., are all points which may play more or less important parts in the production or continuance of diseases of the skin.

Sedentary habits are undoubtedly the cause of many of these affections, and unless they can be changed, permanent cure cannot be effected in many diseases.

Walking affords sufficient exercise if taken briskly, but the slow saunter is hardly capable of quickening the circulation enough to cause the proper blood changes to take place. The distance walked must vary, of course, with the patient; but from two to four miles daily is a small rather than large amount for the healthy person to average. Horseback riding often assists greatly in the cure of skin disease; carriage-riding, even if for quite long distances, does not give sufficient active exercise. Rowing, boating, etc., should all be encouraged in those with chronic skin diseases, for by far the larger share of them are associated with a sluggish state of the system.

In his work on “Diseases of the Skin,” Mr. Hunt, speaking of air and exercise, says:—“Those diseases of the skin the cure of which is found most tedious and difficult generally occur in the sedentary class. Shoemakers, tailors, weavers, sempstresses, and artizans of all kinds who work many hours per day in close, confined apartments often suffer severely, both from general weakness and impaired health; also from various cutaneous maladies arising from breathing impure air, from checked perspiration, and disuse of the muscles of locomotion. The bowels are generally constipated; and in

females menstruation is scanty and painful; and both sexes complain of headache, dyspepsia, nervousness, and debility. Yet the remedy is much in their own hands. Most of them reside either in the country, or within easy walking distance of some of the now numerous suburban parks provided for their health. Early in the morning, in the summer especially, for one or two hours before the day's work commences, the air of these parks is as pure and salubrious, and as sweet with the exhalations of leaves and flowers, as the most distant country park. A walk of three or four miles before breakfast, when once it becomes a habit, gives tone and strength and spirits for the sedentary toil of the day in a degree incredible to those who never imbibe the sweet breath of morn.

"The early closing movement may be turned to good account by an evening stroll in the parks; but, as compared with the early rising movement, it is unimportant.

"The morning stroll has other recommendations equally strong, which it may not be deemed an unpardonable digression to mention: I refer to its moral influence. The quiet of the morning invites, almost compels, calm meditation. To the young it offers no temptations. Places of questionable or immoral amusement are closed. The profligate, vicious, and profane are for the most part asleep, and for a time innocuous and inoffensive; the morning air often exhilarates, always refreshes and cheers, the spirits. A gleam of hope, and a sense of peace and tranquillity, if not of contentment and happiness, may beam on the mind, long depressed and fretful, almost as naturally on these occasions as the rays of the rising sun enliven and adorn the scenes of nature. His must, indeed, be a misanthropic mind who can, in these bright hours, brood over his troubles, or cherish thought of malice or ill will. And let me remind the hale and active youngsters, who naturally think that a lonely morning walk must be a 'dull and stupid affair,' that a moderate use of gymnastic exercise at the foot of Primrose Hill, or elsewhere, at five o'clock on a

summer's morning, would invigorate his frame and improve his figure without bringing him under the suspicion of being thoughtful or intellectual. And all who are disposed to doubt the happy influence of the early stroll, and to regard this description as exaggerated and false, let me only say—*Try it, and try it for a month.*"

Overwork and too little sleep are fruitful causes of many of the skin diseases, with nervous elements, and should be regulated.

Neglect of bathing and friction to the skin can produce disease of this organ; although over-stimulation is also quite as bad in some cases.

A few words in regard to summer resorts, and sea air and bathing, in diseases of the skin, may not be unacceptable. Some skin diseases are certainly much worse in winter, as chronic eczema and pruritus, while others are more apt to give annoyance in summer, as urticaria, acute eczema, prickly heat, etc.; as a rule, the more acute eruptions are made worse at the sea shore, and the larger share of skin diseases are benefited by mountain air. Acne is almost invariably made much worse by sea air and bathing; old eczema patients are often much benefited at the sea shore; but if there is any raw surface, it is certainly aggravated by sea-bathing. Psoriasis is benefited by the sea, and warm sea baths may even be taken in winter with advantage in this complaint.

Popular opinion favours greatly the mineral springs in cases of diseases of the skin, and they are resorted to indiscriminately by those suffering from them. There can be no doubt of their efficacy in certain skin diseases, but they are not to be used rashly without a definite knowledge of what is to be accomplished; waters which may be beneficial in some eruptions are as surely harmful or inefficacious in others. Special advice should be sought from physicians familiar with the subject; but to go to any health-resort unintelligently is like visiting a chemist's shop, because sick, without a definite prescription. In general it may be said that their value is very much over-rated.

Foul air, either in the sleeping room, parlour, or office, is a matter which should never be neglected either in disease of the skin or of any other organ, or in health, for by lowering the vitality it undoubtedly invites much disease. Dampness of apartments may in the same way give trouble; and also too great dryness—as by furnace-heat without evaporating water—can dry the skin too much, and cause it to become diseased.

Sunlight is quite as necessary to health and life in the human being as it is in plants and flowers. All know that these will not flourish on the north side of a house, or if deprived of the actual rays of the sun, however light their surroundings may be. Just so, as an element of health of the skin and other organs, the God-given sunshine is essential to man, and the avoidance of it, wilfully or carelessly, is a cause of the occurrence and obstinacy of disease.

In conclusion, it may be said that in chronic skin diseases the whole system is chronically deranged, and to accomplish their cure and prevent their return, it is frequently necessary to alter the conditions of the system. To accomplish this, it is not enough to singly apply a wash or a salve, or take a few drops of this or that remedy, but by a combination of all the means known to science, by diet, hygiene, and medicine, the disordered organ and system must be restored to the state of health. And the application of the same rules, together with self-restraint, will serve to prevent a recurrence of the skin disease.

Skin, Itching of the.—See PRURITUS.

Skin, Muscles of.—See MUSCLES OF SKIN.

Skin, Negro's, Why Dark.—See NEGRO'S SKIN, WHY DARK.

Skin, Nerves of.—See NERVES OF SKIN.

Skin, Physiology of.—See PHYSIOLOGY OF SKIN.

Skin, Susceptibility of.—See SUSCEPTIBILITY OF SKIN.

Skirret.—This is a root used as a common pot-herb, and it agrees in its general qualities with the other esculent roots.

Skull, The (*Danish*, skal, shell; *Icelandic*, kollr, skull; *Scotch*, skol, bowl).—The cavity of the skull contains the brain within its hard, unyielding walls. The skull

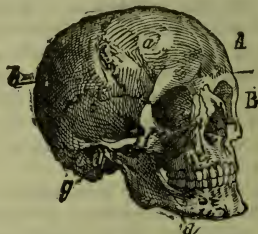


FIG. 1.—THE HUMAN SKULL.

(which is depicted in Fig. 1) is not one continuous bone, but is composed of eight distinct parts, united by ragged edges, somewhat like saw-teeth, called *sutures*. These bones are also composed of two plates or tablets, united by a spongy, porous portion of bone. The outside plate is tough and fibrous; the inside one hard and glassy, and hence called the *vitreous* plate. The skull contains the brain, and we here see the hand of Wisdom displayed in guarding that important and sensitive organ. The outside plate, which is tough and yielding, and the spongy portion between the two serve to diminish the vibrations and shocks in cases of falls and blows. The skull being composed of several bones, is also calculated to prevent fractures from extending as far as they otherwise would if it were one continuous bone. The skull of a woman is smaller and lighter than that of a man. The internal capacity is about 10 per cent. less than that of the male. The principal bones of the skull are:—

a, the frontal bone; *b*, the parietal; *c*, the temporal; *d*, the inferior maxillary, or lower jawbone; *e*, the superior maxillary

bone; *f*, the malar bone; *g*, mastoid process of temporal bone.

Skull, Fracture of the.—With reference to fracture of the skull, it may be remarked that the different bones of the head may be depressed as well as fractured, and in young subjects they are often depressed without fracture. In most cases of fracture, indeed, one portion of the bone is pressed down below the level of the other, and this unevenness of surface under the scalp often renders the fracture sufficiently apparent, where there is no wound in the scalp. But, when the scalp is much wounded, the fracture, if it exist, may be detected both by the eye and the finger. But whether such be the case or not, keep our former advice in view; and if it should happen to any one to meet with a person who, after a blow or a fall upon the head, remains insensible, he or she may rest satisfied that the case is of too serious a nature to remain under his or her individual management.

80 deg. In the negro it is diminished to 70 deg. In the monkey Camper found it to vary from 47 deg. to 60 deg., being greater in the young ourang than in the old.

Sleep.—What is sleep? We do not know. "We can only say," remarks Mr. G. H. Lewes, "that it is a condition belonging to almost every animal organism (at any rate, to every organism possessing a high nervous development), which seems naturally brought about by the activities of that organism, and which, in some unexplained manner, helps to reinstate exhausted energy of brain and muscle."

The latest and best supported views of the process of sleep, [physiologically considered, are that it arises from a depletion or flowing away of blood from the brain. This view is powerfully sustained by the observation of the brain of a beggar in Paris, whose skull was fractured, and had to be covered with a silver plate; for it was observed that when the man fell asleep, his

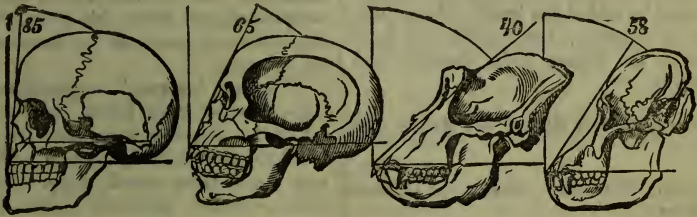


FIG. 2.—MEN'S SKULLS AND MONKEYS' SKULLS.

Skulls of Men and Monkeys Compared.—In the accompanying illustration is represented a series of crania—the first two belonging to the human subject; the last two to the monkey—displaying the facial angle of Camper. By the facial angle is understood the angle that is formed by two lines, one drawn through the external auditory meatus and the base of the nose, and another from the most projecting parts of the forehead, through the incisor edge of the upper jaw. This angle in the European adult was estimated by Camper at

brain sank, and only regained its natural size and form when he awoke.

The state of fluctuating conditions which we name sleep, and which passes by insensible gradations from waking to dozing, from dozing to dreaming sleep, and from that, perhaps, even to dreamless sleep, is determined by the state of our organs. It cannot be produced by any effort of the will unless other predisposing causes co-operate. Every one knows the wretchedness of a sleepless night. On the other hand, no effort of our will can prevent sleep under

certain conditions of the exhausted organism. Neither pain nor fear of death will suffice. Damiens slept on the rack, exhausted by torture; and many a victim to chronic pains knows the temporary refuge of sleep.

Sleep, Approach of.—Sleep is ordinarily preceded by a feeling of languor and heaviness, during which we see some of the unobserved functions of the nervous system make themselves apparent. Thus, first of all, the eyelids droop; we are not aware of any strain in keeping them open, yet the moment our attention, involuntary though it be, is taken off, they gradually sink. So, too, the head, ordinarily held erect, falls forward, and the limbs arrange themselves into the easiest posture. Even if the individual lies down, it will be noticed that, as sleep comes on, a different posture is assumed, one which allows of the relaxation of all his limbs and all his muscles. The respirations, too, are slower, gentler, and more prolonged—they are carried out with the least possible amount of work—and the same may be said of the heart. Sleep, then, might be defined as the condition of least action in the human body, mentally and physically.

Sleep, Brain and.—*See* BRAIN AND SLEEP.

Sleep, Custom and.—*See* CUSTOM AND SLEEP.

Sleep, Deficiency of.—*See* DEFICIENCY OF SLEEP.

Sleep, Doing without.—How long can a person exist without sleep? is a question oftener asked than answered, and the difficulties of answering the question by experiment would seem to leave it for ever unsolved. A Chinese merchant had been convicted of murdering his wife, and was sentenced to die by being deprived of sleep. This painful mode of death was carried into execution under the following circumstances:—The condemned was placed in prison

under the care of three of the police guard, who relieved each other every alternate hour, and who prevented the prisoner from falling asleep night or day. He thus lived nineteen days without enjoying any sleep. At the commencement of the eighth day his sufferings were so intense that he implored the authorities to grant him the blessed opportunity of being strangled, guillotined, burned to death, drowned, garotted, shot, quartered, blown up with gunpowder, or put to death in any conceivable way which their humanity or ferocity could invent. This will give a slight idea of the horrors of death from want of sleep.

Damiens, who attempted the assassination of Louis XV. of France, and who was sentenced to be torn in pieces by four horses, was, for an hour and a half before his execution, subjected to the most infamous tortures with red-hot pincers, melted lead, burning sulphur, boiling oil, and other diabolical contrivances, yet he slept on the rack, and it was only by continually changing the mode of torture, so as to give a new sensation, that he was kept awake. He complained, just before his death, that the deprivation of sleep was the greatest of all his tortures.

"The cry for rest," a physician says, "has always been louder than the cry for food. Not that it is more important, but it is often harder to obtain. The best rest comes from sound sleep. Of two men or women otherwise equal, the one who sleeps the better will be the more healthy and efficient. Sleep will do much to cure irritability of temper, peevishness, and uneasiness. It will restore vigour to an overworked brain. It will build up and make strong a weak body. It will cure a headache. It will cure a broken spirit. Indeed, we might make a long list of nervous and other maladies that sleep will cure. For those who are overworked, haggard, nervous, who pass sleepless nights, we recommend the adoption of such habits as will secure sleep; otherwise life will be short, and what there is of it sadly imperfect."

Sleep, Duration of.—See DURATION OF SLEEP.

Sleep during Pregnancy.—A pregnant woman generally requires more sleep than usual, and owing to the naturally irritable state of her nervous system at this time, it exercises a soothing influence upon her. Should difficulty in breathing comfortably be experienced in lying down, or should she suffer from a feeling of suffocation, as frequently happens during the later months of pregnancy, the shoulders and back ought to be well supported with pillows, and if this does not suffice, a bed chair may be employed.

Sleep, Excess of.—See EXCESS OF SLEEP.

Sleep for Children.—During infancy and childhood the disposition to sleep is great, the first few weeks of the infant's life being for the most part one long sleep, the little one only awaking when the calls of hunger compel it to do so, and again dropping off so soon as its hunger has been appeased. Gradually, however, the periods of wakefulness will be noticed to lengthen, and the child will be found at the expiry of a month or so looking about it, and beginning to take notice of those things by which it is surrounded. And now is the time to begin teaching the infant habits of regularity in sleep.

It is desirable, for the first month at least, that the child sleep with its mother. This is rendered necessary for the reason that the power of generating heat is very feeble in young infants, and to place them thus early in the cot would be to expose them to a trial which might easily prove very dangerous. For the first month, therefore, the child should sleep with its mother, in whose bosom alone it can find that warmth which is so necessary for it at this time. Care must, however, be taken that the child be not overlaid, as many deaths have been caused from carelessness in this respect. Indeed, we may extend our remarks to even

a longer period than that in which any danger of overlaying exists, and call attention to the fact of how many deaths arise from pure carelessness on the part of those who ought to know better. Mothers and nurses mean no harm, but the best intentions coupled with stupid actions never yet did any good in the world. Certainly the number of fatal cases bears but a small proportion to the number of careless mothers; but in this we see only another proof of the proverb that children are watched over by Providence.

When the first month is over, regular habits in regard to sleep must be begun. The infant should then be placed in a cot, which ought to occupy such a position in the room as will exempt it from exposing the child to any draught or current of air by which it might be injured. Attention must also be paid to the covering of the child, which should only be sufficiently warm to maintain the infant in a moderate degree of heat. By carelessness in regard to this, many children are unduly heated, are rendered irritable and restless, and their sleep in consequence is disturbed. But while attention is paid to see that the child is not over-heated, care must also be taken lest the opposite extreme be run into of allowing the child to remain without a sufficient quantity of clothes to maintain vital heat.

The head should be kept cool. No covering should be placed upon it in the form of nightcap or shawl, and the pillow ought to be one of horse-hair. The amount of clothing above requires to be judged of in comparison with those articles which serve the infant in place of a mattress. Thus, if it sleep upon a feather-bed, such as an eider-down quilt, or the like, this will necessitate, owing to its warmth, less clothing being put on above; whereas if the child sleep upon something else, and have a sheet next the skin, this being colder, will necessitate a warmer covering above.

For the first two years or so the child will generally sleep three times in the twenty-four hours, and the two naps during

the day must be so timed as not to interfere with the dieting of the infant. Regularity in this should also be observed from the first; thus the noon nap should be taken from about eleven till one o'clock, and the child should be again encouraged to sleep for about an hour after the principal meal of the day. Young infants cannot pass their time more profitably than in sleeping at such periods. After the first two years have passed, the afternoon nap may be discontinued, but that at midday should not be hurriedly broken off. It may be advantageously continued till the fifth or sixth year has been reached. Till about the tenth year a boy will generally sleep a round of the clock, and if he do, the period of his slumber should not be cut short. After this time the hours devoted to sleep may be somewhat curtailed, but this ought always to be done cautiously, and the growing boy should rather be encouraged to sleep more than is perhaps absolutely necessary than have his hours of sleep unduly shortened. As the period of puberty approaches, the necessity for so much sleep diminishes, and the hours may be somewhat shortened, about eight hours being allowed for this purpose. From this time onwards there can be no reduction of the hours of sleep without risk of the health becoming impaired in consequence. A child should not be allowed to sleep with lights burning about it.

A babe will go to rest immediately after feeding, and the digestion of its simple and fluid nutriment will not be deranged in consequence, but children, when they have begun to live on more solid food, should not be encouraged to sleep until an hour or so after their last meal. Sleeplessness is always an indication of derangement of function or organic disease. Unnatural excitement often is the cause of an indisposition to sleep in children otherwise healthy. If kept up late at night, exposed to the glare and heat of the gas or other artificial lights, stimulated by the presence and vivacity of the society ordinarily gathered together at that time, and their curiosity

aroused by the piquant topics of conversation, of which just enough is understood to create a lively wonderment, young children, when they finally are put to bed, are apt to lie awake in an agitated state. Their excited minds and irritated nerves keep their bodies, however greatly fatigued and demanding repose, in such restlessness that sleep is impossible.

A healthy child requires no other inducement to sleep than his own natural instinct. Cradles and rocking-chairs are undoubtedly powerful means of producing slumber; so, in fact, are all stupefiers—chloroform, opium, carbonic and prussic acids. The motion of the cradle or rocking-chair owes its power of causing sleep to its power of causing stupor, and the application of it, however slight, to the delicate nervous system of the infant, should be avoided as dangerous. No opiates of any kind, whether authorized by the formularies of the regular doctor, or smuggled into use under the disguises of the nostrum-vendor, should ever be given to very young children. Laudanum and paregoric, soothing mixtures and sleeping cordials, are very dangerous remedies which always injure, and often kill, when administered to a sleepless but not otherwise unhealthy child.

Children should, if possible, never be sent to bed except in a cheerful mood. A fit of anger or a fretful moment at bed-time will often disturb the repose of the whole night. Most children have a horror of darkness, which seems almost unnatural to the vague imaginations of the young. This cannot be removed by a forced subjection, and should never be attempted. When it exists, the quiet presence of an elder person, or the small glimmer of a light through the partly opened door of a contiguous room, will be generally sufficient to conjure away all imaginary terrors of childhood, and this slight indulgence should never be refused. It need hardly be said that every child should be spared the unnecessary horrors arising from fictitious spirits, "Bogie," "The Old 'Un," and other monstrosities invoked by a nurse's stupid fancy.

Sleep for Women.—*See* WOMEN, SLEEP FOR.

Sleep, Intensity of.—*See* INTENSITY OF SLEEP.

Sleep, Light and.—*See* LIGHT AND SLEEP.

Sleep, Mental Activity during.—*See* MENTAL ACTIVITY DURING SLEEP.

Sleep of Patient, Observation of.—With regard to sleep, the number of hours should be recorded, also which hours. Did he sleep during the early part of the night and remain wakeful afterwards, or was he restless and wakeful throughout the first part of the night, and did he then fall into a troubled doze, and awake unrefreshed in the morning? Careful attention to ascertain these facts is very important, as the remedy to be applied in the two cases is different. In the former, on applying external warmth, or giving food or stimulants, you will frequently put the patient under those conditions which shall enable him to obtain undisturbed sleep during the remainder of the night; while in the latter, by administering some sedative, you obtain a like result during the earlier hours.

The appearance of the patient on awaking from sleep should also be observed, and the kind of sleep obtained, whether quiet and peaceful, or disturbed and rambling. By the careful observance of such facts the medical man will be put in possession of much valuable information, which will serve to act as a guide in regard to the line of treatment most likely to act beneficially upon the patient. All facts thus observed by nurses and those in attendance upon the sick, and reported to the physician, will be carefully weighed by him, and due importance attached to each, and, taken in conjunction with what he himself has observed, may prove of great service in the management of the case.

Sleep, Position in.—Generally it is better to lie on an inclined plane, or with

the head moderately raised, but not so high as to produce any strain upon the muscles of the neck, for spasmodic or irregular action of these muscles appears to have a singularly disturbing effect upon the brain. All needless pressure upon the spine ought to be avoided, and hence it is advisable for wakeful persons to lie upon an elastic mattress, placed upon a feather bed, which equalizes pressure without subjecting the body to excessive warmth.

Those in ordinary health should not have a pillow any higher than will keep the head three inches above a horizontal line, or above the level of the body, because, in addition to the reason given in the preceding paragraph, that position admits of the most easy and natural and equable circulation of the blood, and keeps both lungs and heart less pressed upon and confined. If the head is high, it bends the chin upon the breast and throws the arms inwards, each of these tending to confine the chest.

On which side should we go to sleep? On this subject doctors disagree. "In reclining," says one, "the sleeper should lie upon his left side, a habit of doing which may be easily acquired. In this position the heart, which is movable, remains more readily in its natural place, while, if the body lies on the right, this organ is shifted, and, compressing the lungs, interferes with the freedom of breathing." "We should go to sleep," says another physician, "on the right side, for then the food descends through the outlet of the stomach by gravity; otherwise, stomach power is wasted in drawing it up as from the bottom of a well; after the first sleep, let the body take care of its own position." After all, the right position will be found, we think, to be a matter of habit; let the reader, then, give no heed to medical theory, but select that in which he finds he can sleep soundest.

Very delicate persons often appear to be influenced by the direction, as regards the magnetic current, in which they lie; the most favourable effects being observed when the head is directed to the north and the feet to the south.

Sleep, Procuring.—*See* PROCURING SLEEP.

Sleep, Proper Duration of.—*See* DURATION OF SLEEP, PROPER.

Sleep, Proper Time for.—"If it be good," says Dr. Richardson, "to make all possible use of sunlight, it is equally good to make as little use as possible of artificial light. Artificial lights, so far, have been sources of waste, not only of the material out of which they are made, but of the air on which they burn. In the air of the closed room the present commonly used lamps, candles, and gaslights rob the air of a part of its vital constituent, and supply in return products which are really injurious to life. Gaslight is in this respect most hurtful; but the others are bad when they are long kept burning in one confined space. The fewer hours after dark that are spent in artificial light the better; and this suggests of itself that, within reasonable limits, the sooner we go to rest after dark the better.

"We require in the cold season of winter, when the nights are long, much more of sleep than we do in the summer. On the longest day in the year, seven hours of sleep are sufficient for most men and women who are in the prime of life. On the shortest day, nine hours of sleep are not over much, and, for those who are weak, ten or even twelve hours may be taken with real advantage. In winter, children should always have ten to twelve hours' sleep. It is not idleness to indulge to that extent, but an actual saving, a storing up of invigorated existence for the future. Such rest can only be obtained by going to bed very early, say at half-past eight o'clock or nine. It is wrong as ever it can be that our legislators should often be sitting up, as we know they do, times after times, in the dead of night, trying against life to legislate for life. It is most foolish that public writers, who hold so many responsibilities in their hands, should be called upon to exercise their craft at a time when all their nature is calling out to them, 'Rest, rest, rest!'

"It is said I am foolish for declaring these things. Is it so? I am standing by Nature, speaking under her direction, and, without a thought of dogmatism, I am driven to ask, May it not be the world that is foolish?—the world, I mean, of fashion and habit, which could, if it would, change the present system as easily as it criticises the view that it ought to make the change. Anyway, this I know, and it is the truth I would here express, that in every man, woman, and child there is, at or about the early time I have named, a persistent periodical desire for sleep, which steals on determinately, which, taken at the flood, leads to a good sound night's rest, and which, resisted, never duly returns, but is replaced by a surreptitious sleep, broken by wearing dreams, restless limbs, and but partial restoration of vital power.

"I have said before, make the sun your fellow-workman. I repeat the saying now. I do not say, go to bed at all times with the sun and rise with it, because in this climate that would not be, at all seasons, possible; but I say, as a general principle, as closely as you can, make the sun your fellow-workman; follow him, as soon as you are able, to rest, and do not let him stare at you in bed many hours after he has commenced his daily course. Teach your children, moreover, this same lesson, and the practice of it, whereupon there will be, in a generation or two, even in this land of fogs and dulness, a race of children of the sun, who will stand, in matter of health, a head and shoulders above the children of the present generation."

Sleep, Satisfactory Conditions of.—Sleep, however sound, cannot be healthful without those conditions which physiology proves to be essential to the proper action of the functions of life, whether in full or partial operation; for in slumber, it must be recollected, there is not cessation but merely diminution of vitality. The brain, the nerves, the lungs, the heart, the digestive apparatus, the muscles, and, in fact, all parts of the ani-

mal system, work by night as well as by day, though indeed with greatly diminished activity. The body, therefore, is subject to the same physiological laws in sleep as in wakefulness, and it is fatal to attempt to withdraw it from their control.

The influence of custom may affect the protraction as well as the abbreviation of sleep. The state of the brain produced by an excess of sleep is very unfavourable to the exercise of its powers of perception and action. Such a condition may almost be described as a chronic disorder of the nerve centres, and is often the result of natural changes in the direction of decay from old age. The growth of habit and self-indulgence may prematurely bring it on, and this danger, as well as the opposite one of taking too little sleep, must be carefully guarded against.

Sleep, Sounds and.—*See* SOUNDS AND SLEEP.

Sleep, Temperament and.—*See* TEMPERAMENT AND SLEEP.

Sleep, Volition during.—*See* VOLITION DURING SLEEP.

Sleeping after Dinner.—*See* AFTER DINNER.

Sleeping Draught.—*See* DRAUGHTS.

Sleeping Draughts.—*See* DRAUGHTS, MEDICINAL.

Sleeping Draughts.—Sleep may sometimes be purchased too dearly. Macbeth murdered sleep, and a large and, unhappily, increasing number of well-meaning but misguided persons poison it. While in attacks of illness the use of alcohol, opium, and chloral often proves of the greatest service, readers cannot be too strongly warned against their use to secure sleep, as there is good reason to believe is too often done. The sleep produced by such narcotics as opium, chloroform, chlorodyne, and the rest of the narcotics or so-called sedatives—let

them act as they may “on the nervous system directly” or “through the blood”—is poisoned. Their use gives the person employing them an attack of cerebral congestion, only differing in amount, not in kind, from the condition which naturally issues in death. There is grave reason to fear that the real nature of the operation by which these deleterious drugs, one and all, bring about the unconsciousness that burlesques natural sleep is lost sight of, or wholly misunderstood, by those who have free recourse to poisons on the most frivolous pretences, or on none save the exigency of a morbid habit.

Sleeplessness, Cold Feet and.—*See* COLD FEET AND SLEEPLESSNESS.

Sleeplessness during Pregnancy.—Sometimes during pregnancy females are troubled with sleeplessness, which, if allowed to go on long without being relieved, may seriously impair the health; so the necessary means must be taken to procure rest.

Sleeplessness, How to Cure.—Thousands suffer from wakefulness who are otherwise in good health. To some of them this becomes a habit, and too often a growing one.

The great thing, in most cases, to procure sleep, is to obtain absolute rest of mind. To men of active brain this is sometimes singularly difficult, and many plans have been proposed to overcome the difficulty. They all consist in this: in attending to something of absolutely no interest, and which is of a dull, uniform nature. One in imagination watches sheep jumping through a hedge; another fancies he sees ships sailing out to sea. And many, doubtless, have heard of the midshipman who, when he could not sleep because there were no waves beating against the sides of the ship, got his mother to imitate the familiar sounds by dashing pailfuls of water against his bedroom door. A safe remedy for want of sleep—less original, perhaps, than any of

the above, but suited to almost everybody—is nothing more nor less than eating onions. Common raw onions should be taken, but Spanish onions stewed will do. Mr. Frank Buckland says: "Everybody knows the taste of onions; this is due to a peculiar essential oil contained in this valuable and healthy root. The oil has, I am sure, highly soporific powers. In my own case it never fails. If I am much pressed with work and feel I shall not sleep, I eat two or three onions, and the effect is magical."

Dyspeptics are seldom sound sleepers, and in many cases the first thing to be done is to get the digestion in good order. This little fact shows the importance of dealing with every case on its own merits, and not by mere routine. Thus, we have known an individual who passed sleepless, or worse than sleepless, nights, and was troubled with evil dreams and nightmare as soon as his eyes were closed, have chloral administered. As a consequence, the dreams and nightmare were worse than ever, but a blue pill and a black draught speedily secured sound and refreshing sleep. Constipation and interference with the functions of the liver are serious enemies to satisfactory repose.

To many a due amount of exercise in the open air is absolutely indispensable, if sleep is to be procured; and it is often observed that a buffeting with the wind causes sleep sooner than any other form of exertion. The diet, too, must be attended to, if sleep is to be refreshing. Here every man must be a law to himself, for what sometimes soothes and comforts one man may excite another; and altogether prevent sleep. There is, however, one great rule, and that is never to go to sleep with an undigested meal in the stomach, if it be at all a heavy one. To this end many do much better by making their chief meal early in the day, and only taking a light meal in the evening. Tea and coffee taken late in the day are particularly prejudicial in the interests of sleep. The influence of these, however, differs in different individuals; to some, tea is more stimulating than coffee; to others, the reverse is the case.

Going to bed at a certain regular hour, be that what it may, is powerfully conducive to sleep; habit here, as in other things, becomes all-powerful. It is, too, advisable to have thoroughly done with the work of the day some time before going to bed. If that work has been of a bodily description, the rest will often be enough of itself; if it has been head-work, a change is often best. For many individuals there is no preparation for sleep equal to a pipe and a novel; to others this would be poison.

To many a "night-cap" is essential, be it a glass of wine, a tankard of ale, or a tumbler of grog. If indulged in with discretion, there is nothing to be said against the practice, except this: should the individual be so situated as to have to go without his accustomed stimulant, he will most probably pass a sleepless night.

The condition of the body exercises a great influence, either good or evil, upon the chances of obtaining sleep. When the feet are cold or damp on going to bed, a refreshing sleep is impossible; therefore it is a good plan to spend a few minutes before going to bed in drying and heating the feet, with the stockings off. Indians and hunters, it has been observed, always sleep with their feet towards the camp fire.

Suspense is a powerful sleep-preventer. Thus Dr. Carpenter says, "It is a common observation that criminals under sentence of death sleep badly *so long* as they entertain any hopes of a reprieve; but when once they are satisfied that their death is inevitable, they usually sleep more soundly, and this even on the very last night of their lives."

Among the simple and almost hygienic means of promoting sleep, it may be mentioned that, if restlessness seems to be due to congestion and heat about the head, cold water or cold vinegar-and-water sponged over the forehead and temples will help to relieve it, particularly if other parts of the body are kept warm. The bed-chamber should be well ventilated by having the window open at the top, and the temperature of its atmosphere ought to be kept about 20 degrees, or even (for robust per-

sons) 25 degrees below that of ordinary sitting-rooms. An exception, however, is to be noted in regard to all children and to invalids, especially if suffering from diseases of the lungs and throat.

Southey observes that, "the less men are raised above animal life the sounder the sleep is, and the more it seems to be an act of volition with them; when they close their eyes, there is nothing within to keep them awake."

Sling.—A sling is only a large square piece of cotton or a large handkerchief tied round the neck by the corners to support the arm. It should be brought above the



SLING.

elbow point and extend to the wrist; or, if the hand is to be supported, to the tips of the fingers.

Small Intestine (*Lat. intestinus*, internal; from *intus*, within).—The small intestine is about twenty feet long. It begins at the right hand end of the stomach, just under the liver, and ends down near the right groin. It is divided into three parts—the duodenum, the jejunum, and the ileum, which *see*.

Small Loaves.—*See* LOAVES, SMALL.
M. D.

Small-pox after Vaccination.—Small-pox occurring in persons partially protected by a long previous vaccination is generally rendered much milder, and is called varioloid, or modified small-pox. This modification is seldom fatal, and does not often leave unsightly scars. It is, however, capable of giving genuine small-pox to unprotected persons.

Small-pox, Contagion of.—Contagion is often very capricious. Occasionally, in a family of children, one will be very ill with scarlet fever, and the rest, although exposed to the seeds of the disease, will escape without being affected; at other times, all the members of a household, except those protected by previous attack, will take the malady in spite of ordinary precautions to seclude the affected child from his brothers or sisters. This variety of behaviour is, no doubt, due to some constitutional peculiarity, either temporary or permanent, and has its complete analogy among the larger plants, certain weeds or flowers growing with great luxuriance in particular places and soils, but utterly failing to establish themselves in other and apparently similar localities.

The contagion of small-pox is probably the most virulent of any that we have ordinarily to deal with, and, but for the immortal discovery of vaccination by Dr. Jenner, would perhaps have continued to prevail as a terrible scourge of our race. People of the present day, who complain of the temporary inconvenience and almost infinitesimal danger of vaccination, can only do so through ignorance of the horrible suffering, disgusting deformity, and appalling mortality which attended small-pox in former times. It is estimated that in this country, in the eighteenth century, nearly one-third of the inhabitants, ladies included, were pitted with small-pox, which caused about ten per cent. of all the deaths taking place every year. The mortality was so great, that one out of every four, and in some epidemics one out of every three attacked, died of this disgusting malady; and

when we remember that every one seized with it became immediately an object of danger, dread, and loathing to his best friends and nearest relations, and if he or she recovered, was generally rendered repulsive or even disgusting for life, we can faintly realize what a blessing Jenner's discovery has been to the world.

The method then to avoid the contagion of small-pox is to be vaccinated, and re-vaccinated at intervals of about seven years, or even oftener, if the disease happens to be unusually prevalent. Every child should be vaccinated at the age from six weeks to three months (or sooner if there is small-pox in the neighbourhood) with fresh vaccine matter direct from healthy calves, in order to avoid any possible contamination with the poison of human constitutional diseases. Such virus can now be obtained in all our large cities, and if obtained from responsible dealers is, we believe, quite reliable. The operation should be repeated till it "takes" perfectly, and it is an imperative duty which every parent or guardian owes to his child, as well as to the community at large, without a day's delay beyond the time above indicated as that suited for its performance. If such parent or guardian who reads these lines, whilst an unvaccinated infant lives beneath his roof, will but consider for a moment what a lifelong sorrow it would be to see day after day that dear little innocent face scarred and disfigured by small-pox *always*, simply in consequence of carelessness or neglect to protect it from the destroyer in time, we believe we might soon hope to be told the last of this dreadful malady. Re-vaccination is necessary because, although in a majority of instances a single perfect vaccination protects through life, in a minority of cases this security becomes less and less with advancing years, and as yet we have no means of distinguishing those unfortunate individuals of the latter class, except by reinserting the virus.

The contagion of small-pox is extremely active, spreading readily through a house, and often to neighbouring dwellings. It

may be conveyed by the breath of a person affected with it before any eruption appears, and has been caught from a dead body twelve days after decease. It may be transmitted for long distances in clothing, bedding, litters, etc., unless great care is taken to ventilate and disinfect the same. As it is often propagated by unscrupulous persons when travelling, whilst sick with mild forms of small-pox or varioloid, we would advise every one to examine carefully, at the very first opportunity, a vaccine pock upon a child's arm five, six, or seven days after a successful vaccination, and then studiously avoid proximity to any strangers having similar eruptions upon their skin. Stringent laws are properly enforced against persons who endanger public health by running the risk of disseminating the poison of small-pox.

Small-pox, Dangers of.—Watch all the symptoms carefully, and report promptly any light-headedness, sudden exhaustion, or difficulty in swallowing; notice the manner of breathing and sound of the voice. Pleurisy and laryngitis are among the complications which may occur. If, during the decline of the eruption, and while the secondary fever is in progress, there is a clammy sweat, or sudden sinking, or tremor, give wine whey, or half an ounce of brandy, without waiting for orders. If the pustules sink, or change to a purple colour, give the brandy in hot water, or some hot spiced drink, freely. In either case, let the doctor know at once of the symptoms. In general, follow all directions exactly, and report any changes carefully.

Small-pox, Disinfecting and Isolating.—The carpet of the room should be taken up the first day that the disease is recognised. The mattresses have already become infected, and must not be changed. The utmost possible isolation must be observed. When things are required—food, medicine, clothing, etc.,—the request for them should be written on a slate, which should be hung or stood where

it can be read without taking it down. Whatever is ordered should be brought to some place agreed upon, and left for the nurse to carry to the room. All bed and body clothing must be of the oldest kind, so that it may be destroyed when done with. It must be borne in mind that there is no disease more contagious than small-pox; it has been conveyed by infected articles carelessly put away, and opened years afterwards.

Small-pox, Modified.—What has been termed modified small-pox is an eruptive disease, which frequently occurs during the prevalence of small-pox, and has been observed to occur in persons who have had small-pox, natural or inoculated, as well as in those who have been vaccinated.

Small-pox, Modified, Symptoms of.—The disease is sometimes ushered in with as severe attack of fever as genuine small-pox, but frequently the symptoms are so mild as scarcely to attract attention. After three or four days the eruption appears, which runs through its progress much more rapidly than the genuine disease; the constitutional symptoms subside when the eruption appears; on the fourth or fifth day the pocks or vesicles, which contain, some a thin, pellucid, and others a straw-coloured fluid, more or less opaque, begin to shrivel up, and in a few days more the scabs fall off, there having been no inflammatory blush round the basis of the pock, and no secondary fever.

Small-pox, Modified, Treatment of.—The treatment, if any be required, will be to give a dose or two of salts during the fever, to prescribe a light diet, and to keep the patient cool and quiet.

Small-pox, Pitting in.—"There seem to be so many remedies," says an American physician, "that will prevent pitting in this disease, that its frequency is disgraceful to the medical profession. Any doctor who brings a patient safely through

the small-pox, yet has taken no measures to prevent pitting, deserves to lose his fee.

"In all cases of small-pox or variola, light should be excluded from the room as much as possible, as it aggravates the disease. One remedy to prevent pitting is to dissolve gum-arabic in honey and sufficient lamp-black to colour the whole mixture. Then with a camel-hair brush paint over every pustule or spot. Dr. Schonlein, of Hanover, has a still simpler process, which he says he has used most successfully to prevent pitting in small-pox, and also in measles, scarlatina, chicken-pox, to relieve the itching and irritation of these complaints. It consists in smearing the whole surface of the body, after the eruption is fairly out, with bacon-fat, and the simplest way of employing it is to boil thoroughly a small piece of bacon with the skin on, and when cold cut off the skin with the fat adhering to it, which is to be scored crosswise with a knife, and then gently rubbed over the surface, once, twice, or thrice a day, according to the extent of the eruption and the recurrence of itching and irritation."

Small-pox, Popular Notions Respecting.—A writer in the *Sanitary Record* has said:—"For a popular notion of small-pox it may be enough to cite what it did of old in royal families. In the circle of William the Third, for instance, his father and mother died of it, and, not least, his wife; and his uncle, the Duke of Gloucester, and his cousins, the eldest son and youngest daughter of James the Second; and he himself (like his friend Bentinck) had suffered from it most severely, barely surviving with a constitution damaged for life. In the court of Austria, 'Joseph the First,' says Vehse, 'was carried off, when not more than thirty-nine years of age, by the small-pox, to which, in the course of the eighteenth century, besides himself, two empresses, six arch-dukes and arch-duchesses, an elector of Saxony, and the last elector of Bavaria fell victims.'

"A curious old custom still lingers in some of the more secluded parts of the

country of placing a patient suffering from small-pox in a bed with red hangings. It would be interesting to know the origin of this custom, and how long it has been in vogue. The tradition that red is good for small-pox is at least five centuries and a half old, for we read that John, one of the sons of Edward II., was treated for the disease by being put into a bed surrounded by red hangings, covered with red blankets and a red counterpane, his throat being gargled with red mulberry wine, and the red juice of pomegranates being given him to suck. This was the boasted prescription of John of Gaddesden, who took no small credit to himself for bringing his royal patient safely through the disease."

Small-pox, Precautions against.

—To guard against small-pox, the main reliance is upon vaccination in infancy, and re-vaccination every seven years. Dr. Getchell, of the Jefferson Medical College, says, "Small-pox is a disgrace to any civilized land. My firm belief is, that if every person were *every seven years* duly and properly vaccinated, small-pox might be utterly exterminated." Even vaccination, however, is no certain preventive, unless the system is saturated with the vaccine virus until it refuses, after repeated experiments, to absorb any more.

Whenever an epidemic of small pox is prevalent, a panic takes place amongst the people, and every one is in a hurry to be re-vaccinated; now, although it is no doubt of great importance that those who have been imperfectly vaccinated in infancy should again resort to this operation for further safety, it certainly is not wise to give way to panic, for at such times so great is the application for fresh lymph that the demand exceeds the supply, and thus persons are hastily and insufficiently done. Those who have four or more perfect cicatrices on the arm are free from danger for the rest of their lives; those, on the other hand, who have one or two marks, and these perhaps not very perfect ones, should certainly be re-vaccinated when they attain the age of puberty, and

the operation should be done with as much care as in the case of an infant. The matter should be taken from an infant's arm, and in no case whatever from the arm of a person who has been successfully re-vaccinated, as the lymph then is not sufficiently protective. A popular notion exists that the human constitution changes every seven years; there is, however, no proof whatever of the truth of this assertion, and it seems pretty clear that a second vaccination about the age of puberty is all that is required. If, at the second operation, the arm rises, and all the usual phenomena appear, it is probable that the effect of the first operation had worn off, and the patient was liable to a modified attack of small-pox; if, on the other hand, no effects follow the second time, it is a sign that the original vaccination remains efficacious, and that no danger need be feared even when small-pox is prevalent. It is the custom at the Small-pox Hospital to vaccinate every attendant and nurse when they first enter, and after an experience of thirty years it is important to note the fact that *not a single case* of small-pox has arisen among them. Although a certain small proportion of those who have been thoroughly vaccinated in infancy do take small-pox in a modified form after they are grown up, yet after effectual re-vaccination such a case hardly ever recurs. In Wurtemberg, out of 14,384 soldiers who have been re-vaccinated, only *one* case of small-pox broke out during a period of five years. There can be no doubt that, on the outbreak of an epidemic of small-pox, all the persons in the house should be carefully examined, and those who have no cicatrices, or at least but imperfect ones, should at once be vaccinated, and not only those in the house, but others who live close to and have recently mixed with them, as is the case in a crowded court or alley. If this were sufficiently done, there would be no occasion for a panic, and an epidemic of small-pox would probably be at once stamped out.

Small-pox, Symptoms of.—All children and adults in an intelligent com-

munity are, or should be, vaccinated; but it is safe to repeat the process whenever there is any alarm about recent neighbouring cases of small-pox. But even in those who have been vaccinated the disease will appear in a mild form.

It generally begins with a chill, followed by quick pulse and high temperature, 104° to 106° . The distinctive symptom, however, added to these, is severe pain in the back and pit of the stomach, which increases on pressure. These troubles may abate for a while, but they gradually increase, and are at their height on the third day, or twelve days after exposure to the contagion. The eruption begins about this time, as small pimples, spreading from the face to the neck, and breast, and back, and then to the limbs and extremities. The pain passes off when the eruption is developed, and the patient feels pretty well; but the discomfort will increase again as suppuration begins, and the secondary fever, sometimes announced by a chill, comes on. The temperature rises to 105° – 106° .

Small-pox, Treatment of.—The fever and the eruption go hand in hand, and although the patient may feel some relief on the appearance of the pimples, he is to be treated as a very sick person through the whole of the disease.

Keep the room dark on account of the eyes, which suffer, and ventilate it fully with open windows. Let its temperature be 60° to 65° . Let the bed-covering be sufficiently warm, but not heavy.

Give broth, gruel, milk, etc., as food, and cold water or lemonade to drink. If cold compresses are ordered, re-wet them by pouring fresh water over the cloths frequently.

The eruption has to take its course, but various ways for preventing scars are prescribed, such as keeping the face covered with oil, or, better than this, having strips of thin linen spread with simple cerate and fitted carefully over the face. Whatever applications are ordered, they are to be faithfully used, and the patient is to be pre-

vented from scratching the surface, even in his sleep. To accomplish this, it will generally be necessary to tie the hands up in soft cloths, so that at least the nails may be kept from the face. When there is delirium or unbearable irritation, the only thing to do is to use a shirt with very long sleeves, which you tie together at the wrist.

Smell of Water.—See GOOD WATER, CHARACTERISTICS OF.

Smell, Sense of.—The sense of smell is intimately connected with that of taste, and in one respect is more valuable than the latter, as we are thereby enabled to discover unwholesome substances without exposing ourselves to danger. Thus the brute creation, and especially dogs, possess a more acute smell than the human race, for this is their only guide in searching for food; while man, being endowed with superior faculties, can dispense with such sagacity.

A remarkable circumstance connected with this sense is the extremely minute state of diffusion in which the odoriferous substances of animal origin make themselves perceptible to our senses. A fragment of musk not only gives off a strong smell when it is first exposed to the air, but it continues to do so for an almost indefinite period of time. Yet the odour must be caused by particles of matter which are continually escaping from the musk, so long as it continues exposed to the air. How inconceivably small in weight, how infinitely minute in size, the molecules must be of which this constantly flowing stream of matter consists!

And to vegetable perfume the same observations almost equally apply. A morsel of camphor will for days fill a large room with its scent without suffering any material diminution in weight. A single leaf of melilot will for years preserve and manifest its sweet odour, and yet the quantity of coumarine it contains would probably be inappreciable by the most delicate balance. We know in this country how a stalk of mignonette, placed in an open window, will

scent the air that enters through the whole of a long summer day. But in hot climates, especially during the morning and evening hours, this diffusiveness of perfumes is still more striking. The odour of the balsam-yielding *Humeriads* has been perceived at a distance of three miles from the shores of South America; a species of *tetracera* sends its perfume as far from the island of Cuba; and the aroma of the Spice Islands is wafted out to sea.

Smoking against Fog and Damp.—The smoker, says a writer in the *Lancet*, fortifying himself against fog and damp with the cheerful glow of a cigar in front of his face and the fragrant incense beguiling his nostrils, is apt to forget that nicotine is a potent depressant of the heart's action. We do not assert that it even commonly acts as such when used in moderation, or that a good cigar is to be despised. We have no sympathy with prejudices against wine or tobacco, used under proper restriction as to the time and amount of the consumption. A mild and sound stimulant with meals, and a cigar when the mood and the circumstances are propitious, are not only to be tolerated, but approved. Meanwhile, it is desirable that these things should be used with an intelligent appreciation of their effects, and it is beyond question that one of the most formidable effects of tobacco is its influence on the heart's action. Now, it is upon the integrity of this function the heat of the body depends, and nothing could be more short-sighted than to weaken or hamper the central organ of circulation at a time when it is especially necessary that its work should be performed with due celerity and completeness. In warm weather a cigar exercises a cooling influence by lowering the heart's action. In the cold season it may—we do not say it will—possibly depress, and so increase the mischief it is sought to mend. Fogs and cold vapour tend to reduce the oxygenating properties of the air taken into the lungs, besides exercising a specific influence on those delicate organs. Tobacco smoke may warm the air; it is scarcely

possible that it can affect its quality, or render it innocuous. There is, however, a peril that it may depress its circulation. Hence the need of moderation and care.

Smoking in Excess.—Smoking in excess injures the sight. It does so directly by the irritating smoke coming in contact with the eyes and causing inflammation. It also does so indirectly by the action of the tobacco on the nervous system. The latter is the most serious injury, for it results in dimness of vision and even blindness which is difficult to cure.

It is the experience of the majority of smokers and drinkers that free indulgence in the latter part of the day—in the afternoon and evening—is better borne than in the morning. Especially is this true of tobacco, which, among moderate smokers, is usually reserved for the evening, and the hour after the last meal.

It has been asserted by habitual smokers and drinkers that they can indulge in their favourite stimulants more largely in damp weather than in dry: and many who are exceedingly susceptible to the effect of these agents will bear witness that certain times of the day are more favourable for liberal indulgence than others; that the effects which they experience are strangely modified by the seasons of the year, the hours of the day, and the state of the atmosphere. The fact that there are some who appreciate these differences suggests the probability that very many others are similarly influenced, though not to a sufficient extent to excite their attention.

Snakes, Bites of.—In the British Isles there is but one snake whose bite is at all poisonous, and that is the viper, or adder. In warmer countries the number of venomous snakes is much larger, and the poison they secrete much more active and greater in quantity.

The more rapidly the symptoms of poisoning appear after the bite of a snake, the more dangerous they are likely to be. The two fangs of the reptile commonly enter

and produce two minute wounds, from which only one or two drops of blood may at first issue. A smarting severe pain is immediately perceived, the part begins to swell and a puffiness almost to the bursting of the skin spreads in a short time all over the whole limb. There is fever, often with delirium, small pulse, pain in the region of the heart, and convulsions. These symptoms are attended with a feeling of anxiety and lassitude; laborious respiration, thirst, nausea, vomiting and syncope. Death from the bite of a viper has been known to occur in thirty-six hours. If the individual survive the first effects, the wounded part may become livid and gangrenous; and he may sink under the fever set up.

According to Fontaine, out of more than sixty cases of viper bites, only two were fatal, and in one of these gangrene commenced in the wound in three days, and the person died in twenty days. In one instance, a woman, aged sixty-four, died in thirty-six hours, after being bitten on the thigh by a viper.

Such serious effects from the bite of an English viper are, however, very uncommon; with the exception of slight local and general irritation, it is rare to hear of any ill effects following the bite of a common viper. Not so with the more formidable snakes of other countries. In India and the East, great numbers of persons annually lose their lives through the bites of poisonous snakes. The rattlesnake, cobra di capello, and other smaller venomous reptiles, are well known and dreaded by the natives.

The treatment in case of a bite from a poisonous snake should first be the application of a ligature between the part bitten and the heart, or of a cupping-glass in order to prevent absorption. The wound should be enlarged and well washed. If absorption has taken place and the limb be swollen, the whole of the skin may be smeared with oil, and attention directed to the constitutional symptoms. Brandy and ammonia should be given to prevent depression. Strong acetic acid, which coagulates the poison, may be applied when the person is seen soon

after the accident. An excellent remedy for the bite of the viper is to be found in sweet oil or olive oil, taken internally, and rubbed well into and about the part that has been bitten, the limb, if possible, being held over a chafing dish or brought near the fire.

There is no known antidote to the poison of the cobra. The serpent-charmers of the East appear to secure themselves from injury by extracting the poison bags under the fangs, or by causing the snake to exhaust itself by biting other animals before handling it.

Snipe.—See BIRDS AS FOOD.

Snow, Melted.—See PURE WATER.

Soda Water.—This well-known effervescing beverage contains properly a weak solution of bicarbonate of soda with carbonic acid gas, which is pumped in till the water is well charged with it. It is then bottled, tightly corked and wired. In many cases of fever and thirst this is a very pleasant and grateful beverage.—See also MINERAL WATERS.

Soft Palate (*Lat.* *palatum*, roof of mouth).—If the reader will examine the image of his mouth and throat as reflected in a well-illuminated mirror, such as a hand-mirror, which he can move in such a manner as to throw the rays of light upon the various portions he is observing, he will notice a movable curtain, the *soft palate*, hanging from the back portion of the roof of the mouth, or *hard palate*. When a deep inspiration is taken through the mouth, it will be noticed that this soft palate is forced backward until it touches the back wall of the throat, the *pharynx*; but when the inspiration is taken through the nose, it will be seen that the soft palate moves forward somewhat, so as to leave a considerable space between it and the pharynx, in order that the air may pass by that route into the larynx, and thence through the windpipe into the lungs. This soft palate is composed chiefly of muscles, covered by the mucous membrane which forms the

general lining membrane of the mouth and throat. Its lower border is crescentic on each side, the central portion being prolonged into a tapering extremity, the *uvula*, which, when elongated, is apt to touch the base of the tongue, or the valve (*epiglottis*), on the top of the larynx, and thus produce a sense of tickling, or other annoyance, which gives frequent rise to "hemming," or to a slight cough, to relieve the disagreeable sensation. The soft palate on each side of the uvula is seen to divide into two folds, the front and narrower one of which reaches downward to the side of the root of the tongue, while the back and broader one reaches farther down to the side of the throat, or pharynx. Between each of these pair of folds, a small body, the *tonsil*, is seen to project slightly. Each tonsil is a mass of glands, very apt to become enlarged in acute and chronic sore throat. Acute inflammation of the tonsil constitutes the prominent feature of the affection known as *quinsy*.

Soft Water.—See RIVER WATER.

Soldiers' Dietaries.—See PUBLIC DIETARIES.

Soldiers' Diseases.—In most of the continental services great numbers of the men used to die of consumption and allied diseases, and fevers, probably chiefly typhoid. This lamentable result was not in the least due, however, to exposure to weather, but to what may be called a contrary condition—the want of fresh air in barracks. In some of the best of our own regiments the losses were from one-third more to twice as great as among men of the same age in civil life. The fearful loss of life from disease in the Crimea is well known; and it is from that time that the reforms date which have brought down the total rates of death from disease to one-half of what they were. The present allowance is 600 cubic feet of space to each man in barracks.

Sole.—The flat fish known as the sole is tender, and yet sufficiently firm; it is, there-

fore, easy of digestion, and affords proper nutriment to delicate stomachs.

Solicitors, Duration of Life in.
—See DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Somnambulism (*Lat.* *somnus*, sleep; *ambulo*, I walk).—This is a singular condition of the body, in which a person performs many voluntary acts, implying a certain degree of perception of the presence of external objects, but without consciousness while the actions are performing and without recollection of them when the consciousness returns. This affection, as its name implies, is commonly considered as an imperfect degree of sleep, as it most frequently occurs after sleep, and seems to be but a more active exertion of volition than that which takes place in imperfect sleep, when we move and even talk and support ourselves in various postures.

Somnambulism, Curious Case of.—The following interesting case of somnambulism is given under the head of "somnambulism" in the French Encyclopædia, and appears there as a narrative communicated immediately by an archbishop of Bordeaux:—"At the same seminary with the archbishop was a young ecclesiastic, who used to rise every night in his sleep and write out either sermons or pieces of music. In order to study his condition, the archbishop betook himself several nights to the chamber of the young man, where he made the following observations:—He used to rise, to take paper, and to write. Before he wrote music, he would take a stick and rule the lines with it. He wrote the notes, together with the words corresponding to them, with perfect correctness; or, when he had written the words too wide, he altered them. The notes that were to be black he filled in after he had completed the whole. After finishing a sermon, he read it aloud from beginning to end. If any passage displeased him, he erased it, and wrote the amended passage correctly over the other. On one occasion he had to sub-

stitute the word *adorable* for *divine*, but he did not omit to alter the preceding *ce* into *cet* by adding the letter *t* with exact precision to the word first written. To ascertain whether he used his eyes, the archbishop interposed a sheet of pasteboard between the writing and his face. He took not the least notice, but went on writing as before. The limitation of his perceptions to what he was thinking about was very curious. A bit of aniseed cake that he sought for he ate approvingly; but when, on another occasion, a piece of the same cake was put into his mouth, he spat it out without observation.

"The following instance of the dependence of his perceptions upon, or rather their subordination to, his preconceived ideas is truly wonderful. It is observed that he always knew when his pen had ink in it. Likewise if they adroitly changed his papers when he was writing, he knew if the sheet substituted was of a different size from the former, and in that case he appeared embarrassed; but if the fresh sheet of paper which was substituted for that written on was exactly of the same size with the former, he appeared not to be aware of the change, and he could continue to read off the composition from the blank sheet of paper as fluently as when the manuscript itself lay before him—nay, more, he would continue his corrections, and introduce the amended passages, writing upon exactly the place on the blank sheet which would have been occupied in the written page."

Soothing Syrup.—It is estimated that the "soothing syrup" sold annually in the United States contains fifteen million grains of morphine, all of which is given to infants without the advice of a physician. Less than ten grains at a dose will kill a man; and yet because it "quiets" crying or fretful infants, it is freely given by inconsiderate parents and reckless nurses, destroying infantile life in very many unsuspected cases; in others causing convulsions, water on the brain, and a great variety of hidden and fatal diseases.

Sore Throat, Acute (*Lat.* *acutus*, sharp).—The term acute sore throat is used to designate an inflammatory condition of comparative short duration, affecting any portion or portions of the structure of the throat. Physicians apply separate names to inflammation confined to certain regions, but it is not requisite here to allude to them individually.

Sore Throat, Acute, Causes of.

—The most frequent exciting cause of diseases of the throat appears to be the direct action of cold upon the heated body, especially during active perspiration. Sudden exposures to heat when the body has been chilled is likewise a frequent cause of sore throat. It is therefore necessary to avoid these sudden exposures. Another frequent cause of sore throat, to which males are subjected more than females, is breathing in an atmosphere laden with tobacco smoke, as in the sitting-rooms of public-houses, and the like. This is a much more frequent source of danger than smoking tobacco in a private apartment, although that too is sometimes a cause of sore throat. Another source of sore throat is the use of ice-water. And the worst of it is that many persons insist on the gratification—a very considerable one, no doubt—of swallowing copious draughts of ice-water immediately after eating and drinking what is hot. This frequent alternation of extreme heat and cold eventually injures the delicate structures subjected to it.

Another source of sore throat exists in over-straining the muscles in loud talking, protracted reading aloud, and singing, screaming, calling to the deaf, and so on. In public speakers and singers sore throat is often due to improper methods of breathing and of using the voice, and is only to be corrected by judicious elocutionary exercise, or a system of vocal gymnastics. Theatrical performers, on the other hand, who pay much greater attention to the proper use of their vocal organs, rarely suffer from this cause, although they are subject to sore

throat from ill-ventilated dressing-rooms, badly heated stage flies, and the like.

Sore Throat, Chronic (*Gr. chrou'ikos, from chrou'os, time*).—Chronic sore throats are sore throats of considerable duration—weeks, months, or years, as the case may be; the patient, as a rule, not being confined to the house, unless suffering from some enfeebling malady or very much reduced by the sore throat itself.

In some cases they are the results of one or more attacks of acute sore throat—in others they are the gradual result of prolonged exposure to irritating dust, chemical products, and the like. Then again, they occur without any assignable cause, attracting little attention until they have existed for a long time.

Simple catarrhal chronic sore throat is the mildest form of the affection. It affects the mucous or covering membrane of the palate and pharynx, and not infrequently of the back part of the tongue also, and even the floor of the mouth far back. It is recognised by the bulging forward of the mucous membrane in irregular ridges. The general health is often unimpaired, though there may be languor and indisposition to exert oneself. It is often merely an indication of disorder of the stomach or some portion of the digestive tract.

Sore Throat, Chronic, Symptoms of.—The symptoms are those of local discomfort in the throat, with dryness of the parts and a disposition to expectorate the phlegm that accumulates from time to time; but actual cough is not frequent, except to clear the throat out on rising in the morning. An unpleasant and disagreeable taste in the mouth is often a marked feature of the complaint.

Sore Throat, Chronic, Treatment of.—As the disease is usually associated with diseases of the digestive apparatus, proper attention to the latter will often cure the sore throat without special treatment. When this does not suffice, or when

the disease is not associated with disease of the digestive apparatus, soothing solutions in sprays are indicated—warm, tepid or cold, as may be most grateful to the parts. It usually requires a number of months to get rid of the affection, but the cure is apt to be permanent. When smoking keeps up the sore throat, or prevents its cure, the habit must be abandoned or suspended.

Sore Throat, Clergyman's.—Improper methods of using the voice lead to certain affections of the throat, the chief one of which is popularly known as *clergyman's sore throat*, though it is by no means confined to members of the clerical profession. It occurs in all classes of persons who strain the voice or misuse it. It consists in a congestion of the mucous membrane and muscles of the throat, with enlargements of many of the minute glands which secrete the lubricating fluid that keeps the surface of the throat moist and pliable. These enlarged glands are visible in the form of prominent groups of projections, varying from the bulk of pin-heads to that of small peas or beans, irregularly distributed upon the surface of the mucous membrane. The mouths by which these glands discharge their lubricating material being choked up by swelling, that material becomes pent up in them and unable to escape, and thus accumulates in the glands and distends them. Now, the congestion above alluded to, which is the first step in the entire process, is produced in the following manner: The muscles of the throat, which should be more or less at rest during the use of the voice, are absolutely put into continuous constrained action in improper methods of speaking, as is evinced by uncomfortable sensations during protracted impassioned speaking, or shortly after it. In the same manner as physical consciousness of the possession of a stomach, or of a tooth, or of a toe, for example, is evidence that something is wrong for the time with the stomach, the tooth, or the toe, so physical consciousness of the possession of a throat during speaking, or shortly afterwards, is evidence that

something is wrong with the throat. The strain upon the muscles, and the sense of uneasiness following, are cause and effect, both of which may be avoided by proper use of the organs of voice and speech. In civilized communities, conventional or affected methods of doing things of various kinds are employed by many people instead of natural methods, for various reasons, such as the desire to impress others with a sense of individual importance or originality; and these methods are copied or imitated by others. Hence erroneous and affected methods of speaking become widespread.

In public speaking and in singing it is requisite that a supply of breath be taken in rather quickly at certain intervals, determined either by the character of the passage or the nature of the effect to be executed; and that this supply be husbanded by controlling the expiration in such a manner that the breath shall be allowed to escape from the chest as slowly as is conformable with efficient utterance. Inspirations, therefore, have to be taken at irregular intervals, varying with the sense of the passage, phrase or sentence; and consequently no special rules can be given applicable to all occasions. All attempts to formulate such rules have been failures. It is proper, however, to take an inspiration quickly at every convenient form in utterance, and to utilize every portion of the expiration following in the production of sound. The voice should begin at the very instant of expiration—at the very moment of impact of air against the vocal bands; but the expiration should not be prolonged unnecessarily, for that will deprive the sounds of the volume and fulness towards the close of the expiratory effort. Care should be exercised not to take breath too often. This produces a disagreeable effect. Practice is the only criterion in this respect, and, to be most effective, the practice should be at first under the supervision of a competent critic or instructor.

The prevalence of clerical sore throat among clergymen seems to be due not only to bad production of the voice, but, in fact,

to the inequalities of temperature to which they are often subjected in the performance of their duties, with bare heads exposed to draughts from open windows or in the open air. It has been often stated that clergymen who preach extemporaneously, or without manuscripts, are less liable to the complaint; and this may be so, so far as the constrained position of reading from a desk interferes with the freedom of respiratory movement so essential to the favourable use of the voice without sensible effort. This complaint occurs very frequently in wine-bibbers. City life also seems to favour its development.

Sore Throat, Clergyman's, Symptoms of.

—The earliest intimation of the disease is usually a sensation of dryness in the throat, with a disposition to expectorate, which may comprise the sum total of symptoms for a period of indefinite duration. If the disease continues, there will be more or less hoarseness, sooner or later, with inability to depend upon the voice for any unusual use of it. There may be some difficulty in swallowing, as the disease progresses, and some degree of impairment of hearing. There is rarely any actual pain in the parts, but rather a sense of discomfort as from the presence of some material which ought not to be there. Headache is apt to occur when the disease involves the top of the pharynx at the base of the skull. Dyspepsia and other disorders of digestion are not uncommon.

If the disease progresses—and it often remains at a standstill—the symptoms become aggravated, especially after unusual exertion or exposure. The voice may become so impaired as to interfere with the performance of public duties. Cough is more frequent, and the expectoration more viscid, and often accompanied by painful sensations deep down in the throat, or at the root of the tongue; the patient becomes nervous, and experiences difficulty in swallowing at times, and in breathing at times; all of which adds to the mental disturbance that begins to be manifested, lest the dis-

ease be associated with disease of the lungs, or be indicative of some incurable malady.

Sore Throat, Clergyman's, Treatment of.—The treatment of this affection is tedious, but may be almost always satisfactory if properly instituted. Constitutional treatment is required in most instances, appropriate to the demands of the case, in maintaining the functions of the skin, stomach, and intestines, and other organs, in as healthy a state as practicable. Tonics are often required. In certain cases what are called nerve-tonics are specially requisite. Local treatment of the throat is almost always necessary. This consists in certain applications to the diseased follicles, for the purpose of getting rid of them by absorption if practicable, or by actual destruction, if necessary. This requires careful manipulation at the hands of the medical attendant, or a duly qualified assistant, who has been carefully instructed by the physician. It cannot be done effectually by one's self. In addition to this, the frequent use of spray is likewise of advantage.

Rest from vocal effort is often imperative, and in many cases absolutely indispensable to a cure, especially by those individuals to whom the use of the voice is a means of livelihood. It is chiefly the impracticability of resting the vocal organs that prolongs the treatment of the disease. Improper methods of speaking must also be corrected.

Sore Throat, Common.—This is a slight superficial inflammation of the covering or mucous membrane of both surfaces of the palate and uvula, and usually of the mucous or covering membrane of the tonsils also, extending, in some cases, to the same covering of the back part of the throat, the pharynx; but the mucous membrane of the mouth remains free. It is most frequent in children and quite young adults.

Sore Throat, Common, Symptoms of.—The parts affected are red in colour, more or less swollen, and secrete an

excess of mucus. They are often quite painful on swallowing. Speech is often indistinct, but there is no hoarseness. There is no cough unless the uvula is elongated and tickles the back part of the tongue or the valve (epiglottis) on top of the air-passage.

Sometimes a sore throat of this kind, following exposure to wet, is very severe for a day or two, and subsides suddenly to give way to an attack of acute rheumatism. This form is known as *rheumatic sore throat*, and probably involves the muscles, or the sheaths of tissue in which the fibres of the muscles are enclosed, rather than being confined to the mucous membrane.

In severe cases there is considerable fever, and this is severer in children than in adults. In severe cases, too, the glands at the angles of the jaw become swollen.

It often happens that the sore throat is limited to one side of the body, and then the other side is apt to become affected as the diseased action subsides in the first locality; and if the individual be imprudently exposed, the second attack is apt to be more intense than the first one.

Unless there is some grave constitutional disorder, this form of sore throat gets well spontaneously in from five to ten days, according to its severity.

Sore Throat, Common, Treatment of.—Very often cases of slight sore throat require no special medical treatment whatever. It is prudent, however, to keep in the house, lying upon a couch or bed, with a thin coverlid over the body to equalize the heat of the surface. This precaution will shorten the duration of the attack considerably, and render it less liable to subside into a chronic sore throat, as many neglected cases do. The bowels should be kept relaxed by resort to mild medicine, as castor oil, salts, magnesia, or rhubarb. The free use of mucilaginous drinks, such as barley-water, gum-arabic water, and the like, and of small fragments of ice retained in the mouth until melted, if agreeable, as they almost always are, will soothe the pain in

the throat. Intense heat of the skin may be allayed by sponging the body with acidulated tepid water, bay-rum and water, or alcohol and water. This, with restriction to a very light and easily digested diet for a day or two, will be all that will be required in moderate and ordinary cases. Severe cases will require the advice of a physician.

Sore Throat, Common, Washington's Remedy for.—General Washington's remedy for sore throat, and which others have found quite effectual in this disease, especially when accompanied by hoarseness, was—*onions boiled in molasses*.

Sorrel (*A.-S. sur, sour*).—We gather from the pages of Pliny and Apicius that sorrel was cultivated by the Romans in order to give it more strength and flavour, and that they also partook of it sometimes



SORREL.

stewed with mustard, being seasoned with a little oil and vinegar. At the present day English taste does not lie much in the direction of this plant (*Rumex acetosa*), although the French make use of it to a considerable extent. It is found in most parts of Great Britain, and also on the Continent, growing wild in the grass-meadows, and in a few gardens it is cultivated. The acid of sorrel is very pronounced, and is what chemists term a *binoxalate* of potash; that is, a combination of oxalic acid with potash. In all kinds of sorrel

oxalic acid and oxalates are present in considerable quantities.

Sound, Judgment of.—See JUDGMENT OF SOUND.

Sounds and Sleep.—While loud, abrupt, or unusual sounds of all kinds prevent slumber, it is a curious fact that low monotonous noises, such as the hum of bees, the distant rippling or falling of water, and the dull voice of a heavy reader, are powerful aids to repose, and may sometimes be employed to overcome restlessness with advantage.

He who judiciously studies his health should accustom himself to disregard ordinary disturbances at the time of sleep. There are some who cannot close their eyes while a piano is playing, or people talking in another room, or in the next house. Neither in town nor country can one secure complete stillness or silence; and the man of middle life who requires it, only opens never-failing sources of irritation and inquietude. We do not mean to assert that people should be indifferent to smiths or carpenters at work close to their chambers, but they ought certainly to be able to bear laughing, singing, talking, going up and downstairs, children playing, carriages passing, and the like. We should not only go to sleep the more readily and more calmly, but our slumbers would be sounder and more refreshing.

Sounds of the Heart.—Speaking of these, Dr. James Foulis has said: "If you place your ear over the heart of a man and listen attentively, you will first of all feel the beat or the impulse of the heart. The top, or the apex, of the heart strikes the wall of the chest between the fifth and sixth ribs whenever the ventricles contract, and at the same time you will hear two very peculiar sounds, which are called the heart's sounds. The sounds follow each other quickly, and may be closely imitated by the words *lubb—dupp*. These two sounds are succeeded by a pause, and then we hear them again. You hear the first sound when

the ventricles contract. It is supposed to be produced by the flapping together of the valves at the right and left auriculo-ventricular orifices; and the second, or 'dupp' sound, is supposed to be produced by the flapping together of the valves at the orifice of the aorta and pulmonary artery."

Soups.—Soup has great value for those who hurry to and from their meals, as it allows an interval of comparative rest to the fainting stomach before the more substantial beef and mutton are attacked; rest before solid food being as important as rest after it. In making soups, it is desired to extract as much nutriment of the meat as possible into the water; therefore the meat should be chopped into fine pieces and put to soak in cold water, which is gradually increased in temperature until it reaches the boiling point.

Spanish Wines.—See WINES OF COMMERCE.

Spearmint.—See MINT.

Spectacles (*Lat.* *spectaculum*, a sight or show; from *spec'to*, I look at).—Spectacle lenses are usually made of crown

them; for glass is very often sold instead. What is essential in glasses is, that they shall be perfectly clear, of uniform density, and free from flaws, and shall be properly ground with the right curvature. These essentials are by no means always to be found in cheap glasses; so that spectacles are not good things to economize in.

The kind of frame to be used is very much a matter of taste. It is important, though, that it should set properly, and that the glasses should be correctly centred; that is, that their centres should be opposite to the pupils. Sometimes, to produce certain effects, which it would be out of place to enter upon here, oculists order them decentred—the centres placed closer together or farther apart than the pupils.

Theoretically, the use of eye-glasses, as compared with spectacles, is not to be encouraged; but practically they will always be extensively used, and, in most cases, answer the purpose sufficiently well.

In his "Physiology for Practical Use," Dr. Hinton observes: "The risk of using spectacles too strong is not great, and the subject may be allowed to select for himself those that suit him best for reading. They ought to enable him to read easily at twelve

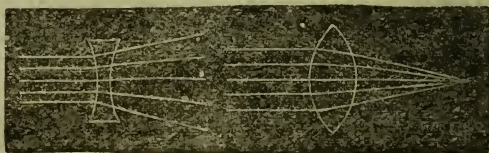


FIG. 1.—DOUBLE CONVEX AND DOUBLE CONCAVE GLASSES.

or flint glass. The former is less expensive, but is softer and more easily scratched. Rock-crystal, or Brazilian quartz, is also used, and is commonly known as "pebble." It has no advantage over glass, except in hardness; in fact, the opticians find it difficult, or impossible, to distinguish between them without a polariscope or a file. Many people, however, are not satisfied unless they have "pebbles," or think they have

inches' distance. It is a natural result from the slowly progressive character of the failure of sight, that stronger and stronger glasses will be necessary as age advances. If the progress is rapid, and especially if the glasses do not relieve it so much after a while as they did at first, then advice is needed. You sometimes notice at church an old man with his spectacles on the tip of his nose, and his Prayer-Book

held as far off as possible. These are sure signs that he wants stronger glasses. The effect of putting the spectacles farther from the eyes is to increase their power. The glasses used ought, however, to be strong

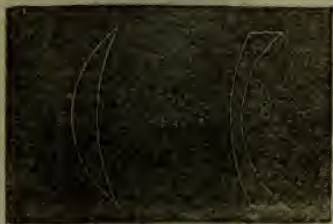


FIG. 2.—A POSITIVE AND A NEGATIVE MENISCUS.

enough to allow of their being kept close to the eyes, and it ought not to be necessary to hold the book more than a foot away."

The spectacle-glasses in most general use are *double convex* for long sight and old

convex or a concave glass according as one or the other of these surfaces has the sharper curvature. (Fig. 2.) The advantage claimed for it is that the image is less distorted when the rays of the light pass through it obliquely than is the case with the ordinary glass, and that, as there is less necessity for looking directly through its centre, the eye may move more freely behind it, and less turning of the head is required. There is no objection to its use, if it is found more convenient; but it has no optical advantage that compensates for its increased weight and additional expense.

Prismatic glasses are used for the relief of the external muscles of the eye. Fig. 3 shows how it is possible to enable both eyes to see a near object without converging. The prisms bend the rays of the light towards their bases, and make divergent rays parallel. The degree of assistance given to the muscles in this way is regulated by the angle of the prisms. Prismatic glasses are sometimes used to correct double vision.

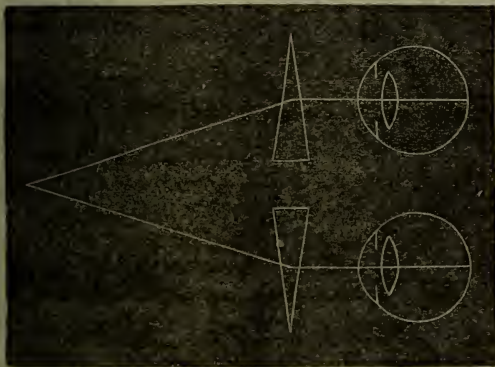


FIG. 3.—DIVERGENT RAYS MADE PARALLEL BY PRISMS.

sight, and *double concave* for short sight. They have the same curve on each surface. (See Fig. 1.)

The *periscopic glass* is what opticians call a meniscus. One surface is convex and the other concave, and it has the effect of a

Speech in Sick-Room.—A writer in *Chambers's Journal*, in considering this subject, says: "The manner of speaking in a sick-room is all important. Oh, the horror of that dreadful 'pig's whisper,' which penetrates to the inmost recesses of

the room, and wakes the sleeping patient as surely as the banging of a door! I call to mind a case of fever—a very bad case, in which sleep was the one desideratum, almost the only hope. The sufferer had fallen into a dose—the terrible throbbing of the arteries in the bared throat seemed a little less rapid, the fire that was burning life away raged a little less fiercely; but some idiot peeped in through a half-closed door, and with horrible contortions of the visage, intended to express extreme caution, whispered in blood-chilling tones, ‘How—is—he—getting—on—now?’ In an instant the patient had raised himself in bed, the poor hot hands were thrown out to ward off he knew not what, the filmy eyes stared wildly round, the parched tongue faltered, ‘What is it? Where is it?’ And for hours the weary head tossed from side to side, and meaningless words fell on the ears of those who watched and waited, and almost feared to hope. And yet it was meant in kindness. The natural voice, only so much lowered as to be perfectly distinct, is then the proper tone for a sick-room. If silence is needed, let it be complete, and no whispering permitted either in the room or, worse still, outside the door.”

Spice, Mixed.—This very commonly used powder is composed of ginger, allspice, cloves, and cumin.

Spider, Bite of.—See POISONOUS INSECTS.

Spinach (*Lat. spina*, a thorn, in allusion to the pointed or prickly leaves of some of the varieties).—This is a wholesome vegetable, which contains a large proportion of nitre. The leaves of some of the smaller varieties of beet are frequently substituted for spinach.

Spinal Column (*Lat. spina*, a thorn; *columna*, round pillar).—The spinal column is shown in the accompanying illustration, as looked at from before, with the structures lying in immediate relationship to it: *a*, the atlas vertebra; *b*,



SPINAL COLUMN.

the odontoid, or tooth-like, process of the axis vertebra; *c*, the axis vertebra; *d*, *e*, the prevertebral muscles; *f*, the intercostal spaces; *g*, the left innominate vein; *h*, the subclavian vein; *i*, the internal jugular vein; *k*, the vena azygos major; *l*, the receptaculum chyli; *m*, the thoracic duct opening into the veins at the junction of the internal jugular with the subclavian vein; *n*, the point of junction of the internal jugular with the subclavian vein; *o*, the superior cervical ganglion of the sympathetic nerve; *p*, the middle cervical ganglion; *q*, the dorsal ganglia of the sympathetic nerve; *r*, the great splanchnic nerve formed by branches from all the thoracic ganglia from the sixth to the tenth; *s*, the external branches from the thoracic ganglia which communicate with the dorsal spinal nerves.

Spine, The.—This, in an adult, consists of twenty-six bones; in a young child, of thirty-three, certain bones in the spine of the child becoming blended with each other in the adult. The spine is more uniform in length in persons of the same race than might be supposed from the individual differences in stature, the variation in the height of the body in adults being due chiefly to differences in the length of the lower limbs. The average length of the spine is twenty-eight inches. In disease of the spine its natural curves are much increased, and the deformity known as *hump-back* is produced.

Spine, Angular Curvature of the (*Lat.* *angulus*, a corner; *curvatura*, arching; from *curvo*, I bend).—Angular curvature of the spine arises for the most part from ulceration of a scrofulous kind in the bodies of the vertebrae. The support in front being thus lost, the spine is sharply bent forwards, so that one or more of the spinous processes project behind, indicating the position of the diseased vertebrae. This complaint is attended with incomplete paralysis of the lower extremities, and is not unfrequently fatal. In case of recovery, the bodies of the contiguous vertebrae are

approximated and consolidated with what remains of those which were diseased by the deposition of bony matter. It is in this species of spinal complaint only that rest and the recumbent posture are expedient. The observance of these essential precautions, concurrently with other means, frequently brings about a cure; the distortion, however, is permanent.

Spine, Lateral Curvature of the (*Lat.* *latus*, *lateris*, side).—This ailment, which has frequently been mistaken for rachitis, is usually called *lateral* curvature, to distinguish it from the more serious kind of distortion, which is called *angular* curvature. Unlike rickets, which almost always commence in infancy or early childhood, lateral curvature of the spine seldom appears before the tenth year. The external deformity consists in the prominence of one hip (generally the right), and elevation of the corresponding shoulder, the blade of which sticks out in unsightly protuberance behind. The opposite hip and shoulder are respectively flattened and depressed; and the symmetry of the chest is destroyed, one side being larger than the other, and both twisted and misshapen. On examination the spine is found to have a double curvature sideways, so as to resemble the letter S, but generally turned the other way, the concavity of the lower curve being on the right, and the upper on the left side. It arises from weakness in the spinal muscles and local elongations of the ligaments of the vertebrae, from the habit of resting the weight in sitting or standing more on one side than the other; and that side is usually the right. The position is more easy than the upright one, and when not corrected by fitting exercise and change in the nature of the employment, it becomes habitual, and the twist of the person permanent and increasing. The subjects of this kind of distortion are chiefly slender and delicate girls in the middle and upper classes, the poor being comparatively exempt. It comes on insidiously, the attention not being awakened by any particular derangement of the health

beyond a certain degree of languor and susceptibility of fatigue, and perhaps a sluggish state of the digestion. The first symptom that betrays its presence is usually a tendency of the dress to slip off the left shoulder. It is much promoted by means often used to prevent it, such as confinement and restraint of the person and posture by stays, backboards, high-backed chairs, reclining on a board, and other contrivances to improve the figure, and restrain the development of the natural form; as well as by the sedentary habits and inappropriate exercises of the academy or school-room. Nature is not to be coerced with impunity by fantastic caprices and contrivances: a good figure as well as good health must be found, if anywhere, in the open air of the fields, in loose and easy clothing, and in unconstrained exercise of the limbs, such as children will always adopt, if left to choose for themselves, in ways much better suited to their age and strength than any that can be invented for them.

Spirit of Mindererus.—See MEDICINES, HOME.

Spleen, The (*Lat. and Gr. splēn*).—This gland is an elongated body of brittle consistence situated to the left of the stomach and between it and the diaphragm. It is a soft, spongy body, of a dark purple colour, placed above and in front of the left kidney, to which it is connected by small blood-vessels and by the cellular membrane. It also has an attachment to the lower edges of the diaphragm, near the spine. The spleen varies in size, but is generally about four inches long, three inches wide, and two inches thick. In the animal this organ is generally termed the *melt*. The spleen sometimes becomes greatly enlarged, and may then be felt below the ribs to the left of the stomach. This often occurs in protracted cases of ague, particularly if much quinine has been taken. It is plentifully supplied with blood-vessels, but has no excretory duct or outlet. The real use of the spleen is as yet unknown, but it is believed

to be specially concerned in the production of colourless blood-globules. It has been removed in animals without being followed by any bad result.

The spleen was at one time thought to be the seat of ill-humour and melancholy. The herb spleen-wort was supposed to remove the splenetic disorders.

Sponge Bath (*Lat. spongia; Gr. sponggos, sponge*).—In diseases accompanied by fever, in which the skin remains hot and dry to the feel, sponging is made use of; and as it is sometimes entrusted to those in charge of the sick for its performance, a few words may be added as to the manner in which this is done. The manner in which it is accomplished is as follows: remove the patient from bed, and, having undressed him, pass several large sponges rapidly over the body until the whole of it has been sponged, after which the patient is to be dried and placed in bed. The object for which this bath is employed is to reduce the heat of the surface by means of evaporation, to cause the skin to act well and render perspiration more perfect, to reduce the irritability of the nervous system, and to promote sleep. This sponging must not be undertaken unless by the advice of the medical attendant. Sponging of the chest and trunk is most valuable in those who have a tendency to asthma or other chest affections, in infants during dentition, and in those who are rather delicate. It may be performed while the patient is in bed, and brisk friction should be afterwards employed so as to cause a glow upon the surface.

When salt and water or vinegar and water are used instead, the friction need not be had recourse to, as we wish merely to remove the water, which can be accomplished by soaking it up with a soft towel. The proportion of either salt or vinegar to be employed should be about four tablespoonfuls to every pint of water. These spongings should be used just before the patient leaves bed in the morning, and may be employed during winter as well as during sum-

mer. In conjunction with open-air exercise and proper attention to diet, this proves a valuable remedy.

Sponge Bath in Bed.—When a sponge bath is given in bed, the chief things to care for are that the bed be protected with a rubber-cloth and draw sheet; that the patient's arms are slipped out of his sleeves, and that a dry night-shirt is always put on after the bath. Take up as little water as possible, but return the cloth to the basin frequently, and change the water three times at least during the bath, having a jug and slop-jar by the bed for the purpose. Everything needed must be at hand before the bath begins. Wash and dry only a part of the body at a time. Dry with soft towels in quick, gentle strokes, enveloping the part in the towel as soon as it is washed, and so avoiding exposure.

Sponges.—Sponges are never to be used about a surgical case; they are necessary in certain operations, but rarely at any other time. Use, instead, a syringe, throwing clean water over the surface of the wound, or a soft piece of lint, if it is absolutely necessary to touch the surface, as in freeing a fresh wound from blood; touch gently, always moving towards the wound.

Spongy Metallic Iron.—This is regarded as being a very good filtering medium. It softens the water as well as removes much dissolved organic matter from it. But, after all, it is a risk to trust to any filters for the removal of deadly or unwholesome matters from drinking waters, and it is probably wiser, in the case of very bad waters, to boil them first and then to filter them.

Sprains (*Old Fr. espreindre*, to strain).

—A sprain is an altered condition of a muscle, a tendon, or the ligament of a joint, produced by violence and rendering motion painful. Bruises, as we have just observed, are always the result of *external* violence, and show themselves by external marks, and may occur on any part of the surface of

the body. Sprains, on the contrary, being generally the effect of undue or unnatural exertions of some of the muscles, may occur independently of external violence. They are also frequently unattended by outward marks of injury, and can only occur in the course of the muscles, and principally at the tendinous muscle or in the neighbourhood of a joint.

When a man slips in walking, or from any cause feels that he is losing his balance, he makes an unusual effort to recover himself, and in this effort he over-exerts some one or more muscles, and is said to receive a sprain; the part immediately, or very soon, becomes the seat of pain; it may be in the loins, or in one of the extremities; and this pain is considerably aggravated by an attempt at motion, and for a long time afterwards motion of the part will excite pain.

Again, a person in falling puts out his hand to save himself, and by the violent exertion of some of the muscles of the arm, or, it may be, by the jar, or shock of the hand upon the ground, some of the muscles, or the tendons about the wrist, the elbow, or the shoulders are sprained; or the ligaments connected with any of these joints may be stretched or otherwise injured. The pain is sometimes immediately intense, at other times but slight at first and very severe afterwards, although there may be no fracture or displacement of a bone, and not even the external appearance of a bruise.

If a person in running or jumping trips against a stone, or alights on uneven ground; or if, when riding on horseback, his horse stumbles, and he makes an unwonted effort of some of the muscles to preserve his balance, he experiences, either immediately or soon after the accident, considerable pain in the foot, the leg, the knee, the hip, or the loins, and will, perhaps, for a long time afterwards, feel painfully the effects of such a sprain.

In these accidents there is very frequently no external sign of injury at the time, and, if the mischief be but slight, there will frequently be none afterwards; but in other cases the usual appearances of a bruise will,

in a day or two, be discernible, although there may have been no blow or external pressure; and in all cases of severity there will be more or less of swelling and other symptoms of inflammation, particularly if the ligaments about a joint have partaken of the violence.

As the nature of the accidents which produce sprains are so various, so the nature of the injury sustained is not always the same. In a majority of cases there is, in all probability, a rupture of some of the small muscular fibres, sometimes a rupture of a fasciculus of these fibres, or the whole of a small muscle, or of its tendon. The frequent concomitant appearance of a bruise is sufficient proof that in these cases small blood-vessels are ruptured. The speedy swelling which sometimes ensues arises, in all probability, from the rupture of lymphatics; and there is no reason to doubt but that in other cases more deep-seated vessels, both sanguineous and lymphatic, are ruptured, when no corresponding appearances display themselves externally. The pain so constantly accompanying sprains bespeaks the implication of nervous filaments in the original injury, and indeed the rupture of the smallest fasciculus of muscular fibres implies the rupture of the nerves and vessels which enter into its structure.

Sprains and Bruises, Embrocation for.—See EMBROCATIONS.

Spray (*A.-S. sprengan*, to sprinkle).—The spray disperser is an apparatus contrived for the formation of spray, and for its inhalation. The usual form of it is that of two indiarubber balls, by which air is forced so rapidly through a tube as to cause a vacuum in a lower tube below it, and the rapid rise of liquid from the bottle in which the tube is fixed. This instrument supplies the place of gargles, and is very useful in the case of sore throat. Iced water and medicated substances are thus used.

Spring Water.—Although spring water may look transparent, it always con-

tains saline matters, and chiefly the lime salts; hence such water, although very agreeable to drink, and quite wholesome, is known as *hard water*, and soap curdles in it, and does not produce a good lather. Carbonate of lime, common salt, sulphate of lime, and carbonate and sulphate of magnesia are the salts most usually present in spring water. They are held in solution partly by the carbonic acid, which all such waters contain. This is seen on boiling the water, when the carbonic acid is driven off, and, on cooling, the water looks turbid, and deposits a small amount of sediment consisting of the above salts. To this cause is due the fur or incrustation on the inside of kettles and boilers. Pure water is very insipid, and it is to the gases and saline impurities of ordinary spring water that its refreshing properties are mostly due. The danger from impure water is due to the organic matters, and those derived from drains, sewers, etc. An excess of lime in spring water is said to cause the "Derbyshire neck," known also as *bronchocele* or *goitre*.

Spruce Beer.—Good spruce beer is diuretic and anti-scorbutic, and sits easily on a weak stomach. It is well suited to the summer, being, from the quantity of fixed air it contains, highly soothing and refreshing.

Squint (*Dutch schuinte*, slope).—The strain of the accommodative power in hypermetropia is the cause, in a great majority of cases, of squint, or "cross-eye." The demand for excessive accommodation causes an excessive tendency to convergence, which ends in a permanent turning inward of one eye. This kind of squint usually commences in children three or four years of age, or older, at the time when they begin to occupy themselves with near objects, as toys and pictures, and to demand accurate vision. At first it occurs only when the eyes are directed to some near object; then occasionally, even when a distant object is looked at steadily or care-

fully, particularly if the child is not well, and is, therefore, less equal to the strain than usual; and, finally, one eye remains constantly turned in towards the nose. The origin of the squint is frequently referred to some attack of sickness, as measles, scarlet-fever, whooping-cough, or convulsions. This may be merely a question of coincidence, as these diseases occur very frequently at about the age when squint is developed; or they may act as exciting causes, by reducing the strength of the patient, so that the eyes are less able to bear the strain; but the real cause is a defect in focus, due to the fact that the eye is not properly formed—is not “according to measure.”

When a want of harmony in the action of the external muscles of the eye-ball causes the image to fall on parts of the retina which do not correspond, double vision at once results. To avoid this annoyance, persons with squint have to use only one eye; the image on the retina of the other is said to be “suppressed.” In consequence of the constant suppression, the vision of the squinting eye becomes greatly impaired, in fact, accurate vision is lost, though the eye remains perfectly healthy.

In the early or periodic stage, before it becomes constant, this kind of squint may be cured by correcting the optical defect with proper glasses, which remove the cause by taking away the strain. Of course there are obvious difficulties in the way of this treatment in the case of very young children. It is worth some trouble, however, to remove so great a deformity without an operation, and at the same time to preserve the sight of both eyes, which is rarely, if ever, done by even the most successful operation, after the defect has been for some time established. After the squint has been cured by an operation, there is danger of its return unless glasses are worn.

In high degrees of short sight, there is an excessive demand made upon the muscles that move the eyes inward (converge them) in the effort to keep them both fixed upon

small objects held close to the face. Sometimes they prove unequal to this strain and give out, and one eye is turned outward by the opposing muscle, forming an external squint.

The constant strain involved in the effort to overcome this tendency to external squint is prominent among the causes that increase short-sight, and when it cannot be relieved by suitable glasses, an operation is sometimes necessary. This “insufficiency,” as it is called, of the muscles that move the eye-ball to do the work demanded of them, sometimes exists without short sight.

These are the principal, but not the only causes of squint. A squint occurring suddenly, with double vision, is generally the result of paralysis of one of the external muscles of the eye-ball, and is frequently the first symptom of serious disease of the brain. Such a case should receive immediate medical attention.

Squinting.—See STRABISMUS.

Stages of Life, Chinese.—See CHINESE STAGES OF LIFE.

Standing Over-long, Ill Effects of.—People who stand all day at their work, as sales-people and hairdressers, are apt to have pains in the soles of their feet, which may sometimes be relieved by a well-shaped steel shank to the shoe. Varicose veins of the lower limbs and uterine irregularities are also caused by standing. It is a truly inhuman thing to require girls and women to remain on their feet all day without regard to the presence or absence of customers—an inhumanity that in the present day is diminishing.

Starch (*A.-S.* *stearc*, *stark*, stiff).—Starch is found in nearly all our articles of vegetable food. It is almost pure in arrowroot, sago, and tapioca. It is also contained in a peculiar form in seaweeds and Iceland moss.

Starch Bandage.—When this is to be applied, have ready for the surgeon rolls

of *sheet-wadding*, a basinful of thin boiled starch, and roller bandages of the proper width. The surgeon will supply such pasteboard as he may require to be dipped in the starch. If necessary to dry the bandage quickly, have sand-bags heated in



ICELAND MOSS.
(*Cetraria Islandica*.)

the oven, and lay them near the bandaged limb.

A piece of blanket or a heavy, long, soft stocking can be used for a leg bandage, and must be split through its whole length on the upper side, soaked in starch, and applied with a roller bandage, as pasteboard.

Starch, Conversion of, into Sugar in Mastication.—See DIGESTION, PREPARATIONS FOR.

Starvation.—Deprivation of food, either total or partial, is, as we are all aware, known as starvation. In starvation the system, for want of other supplies, is compelled to prey upon itself. The fat goes first—its oxygen and hydrogen furnishing the readiest fuel and the most easily consumed material; then the muscles yield and become soft and wasted, the nervous system falls before the pressure of necessity, and with it goes mental power: delirium follows, and the vital force loses the power

of resisting the ordinary processes of decay.

It cannot be said with any precision, how long starvation will be in effecting its fatal end: we can say, however, *how much waste* is fatal. From the celebrated experiments of Chossat on inanition, it seems that death arrives when the waste reaches an average proportion of two-fifths. That is to say, supposing an animal to weigh 100 lbs., it will succumb when its weight is reduced to 60 lbs. Life may, of course, come to an end before that point is reached, but it cannot, in ordinary circumstances, be prolonged after it.

Stature, Human. — See HUMAN STATURE.

Steel and Henbane Mixture.—See MIXTURES.

Steel and Quinine, Tonic Mixture of.—See MIXTURES.

Sterno - Mastoid Muscle. — See MUSCLES, THEIR USES AND ACTION.

Stewing (*Old Fr. estuver*, to make hot).—There is much economy in this mode of cooking; but the meat itself may be stewed till but little nutriment remains in it. The fibrine may be too completely separated from the other principles, and the gravy or juices spoiled by too long continued heat.

Sticking Plaster.—Sticking plaster, called also adhesive plaster or resin plaster, is used to bring the edges of wounds together, and to retain applications in position. It should be cut in strips varying in breadth from a quarter of an inch to an inch and a half, and in the direction of the length of the web, and not across the breadth, as it will stretch and become useless if so cut. The best mode of heating it is by applying the linen side to a tin vessel containing hot water. The flame of an alcohol lamp, or candle, may also be used for this purpose. The edges of the wound should be held

together with the finger and thumb of the left hand, while one end of the strip, held in the right hand, should be laid on the skin at a distance, and brought across the wound tightly. Before the application of sticking plaster to any part of the body, it should be well dried, and all hair be shaved off.

Stimulants (*Lat.* stimulus, a goad).

—If there is one subject about which it is more necessary than another to write guardedly and to beg for an unbiassed hearing, it is alcohol. It has been said that, in some countries, not a single judge has been known, in a political case, to decide against his party. Precisely parallel is the case of alcohol. Partizanship, *pro* or *con*, very often swallows up completely the reason of the author or speaker. The average temperance lecturer is just as ready with his mis-statements as the lover of whisky is with his.

The results of a very thorough examination of the action of alcohol upon the system may be summed up in a few words. In small amounts it is an arterial and cerebral stimulant, increasing the activity both of the circulation and of the workings of the brain; in large quantities it paralyzes both brain and heart. It is regarded in one sense as a food, in that it is capable of being burnt up in the system and yielding force; but it at the same time lessens the activity of nutrition, upon which the production of force depends. It does not seem to be, on the other hand, a food in the narrower sense of the word—*i.e.*, it is not a substance capable of being formed into tissue. When in sufficient amount, it appears to have the power of checking tissue change. Taken with food in proper quantity, it aids digestion by stimulating the gastric juices to secrete. Taken without food and in a concentrated form, its irritant properties come into view.

Picked up by the veins of the stomach, the alcohol is carried directly to the liver, which, when it is taken undiluted upon an empty stomach, it reaches almost as concentrated as when imbibed, and by its irritant

action chronic inflammation of the liver may be produced. Carried through the blood-vessels, the poison is constantly in contact with their walls, and hence, in habitual hard drinkers, chronic inflammations of the coats of the vessels, with aneurisms and apoplexies in their train, are frequent. If drunk in excess, alcohol escapes from the body through the kidneys, and it may so irritate these organs by its continual presence in their most secret structures, that Bright's disease or chronic inflammation of the kidneys will be the result. For the brain, alcohol has a special fondness. In the hollow places in the cerebrum, known as ventricles, it has often been found in very notable amount.

The deaths directly and indirectly produced by alcohol are so innumerable, that to speak of them is to tell a wearily told tale. A few figures, however, may be cited to show the enormous percentage of nervous affections, to speak only of those, produced by this agent. In 1844, it was stated in a Parliamentary report that, in the ninety-eight visited asylums of this country, containing in the aggregate 12,007 insane persons, 1,799, or 15 per cent., of these cases were due to excessive indulgence in alcohol, and 4 per cent. to dissipation of which drunkenness formed one feature. Dr. Hutchinson reported in the Glasgow asylum (1840 to 1846) one out of four cases as alcoholic. In 1872 it was officially stated that in the Wakefield asylum 16 per cent. of all classes, and in the Edinburgh asylum 16 per cent. of the men and 7 per cent. of the women, suffer from the abuse of spirituous liquors. The collated reports of the insane pauper establishments of England seem to show that, in 11 per cent. of all their inmates, mental ruin is referable to alcohol, and that those who may be termed alcoholic insane paupers yearly cost the State between £80,000 and £100,000 for maintenance. Figures can be multiplied, all pointing in the same direction; but only a few more need be quoted, gleaned from the disease and death records of northern Europe.

Hess found in a Swedish asylum that half

the insane men had been drunkards. Evidence, more frightful even than this, of the ravages wrought by alcohol, is furnished by the effects of the removal of the heavy tax on alcoholic drinks in Norway. In eleven years (1825-36) the percentage of increase for the whole population was: mania, 41 per cent.; melancholy, 69 per cent.; and dementia, 25 per cent. Worse even than this was the effect upon the rising generation, for idiocy increased 150 per cent. That this increase was due to the augmented consumption of alcohol was shown by the inquiry made by Dahl, who found that, out of 115 idiots, 60 per cent. were the children

of drunken fathers and mothers. Drunkenness in the parent may be the cause not only of idiocy in the offspring, but of various other outputs of nervous degeneration and nervous weakness.

Facts such as those just stated barb the arrows of the total abstainer. To combat or to insist upon the argument that the abuse of alcohol by certain persons renders its proper use by others unjustifiable does not come within our present province.

The following three tables, which are extracted from a lecture by Professor T. R. Fraser, published in "Health Lectures for the People," will be found of interest.

TABLE I.—Ratio per cent. from the undermentioned causes to deaths from all causes :—

Cause of Death.	1847.	Gotha Life Office.	Scottish Widows' Fund.	Intemperate Lives.
Head diseases	9·710	15·176	20·720	27·10
Digestive organs (especially the liver)	6·210	8·377	11·994	23·3
Respiratory organs	33·150	27·813	23·676	22·98
Total of above three classes . .	49·100	51·396	56·390	73·38

TABLE II.—Expectation of life among the temperate and intemperate (derived from rather limited data) :—

A temperate person's chance of living is—
At 20 = 44·2 years.
„ 30 = 36·5 „
„ 40 = 28·8 „
„ 50 = 21·25 „
„ 60 = 14·285 „

An intemperate person's chance of living is—
At 20 = 15·6 years.
„ 30 = 13·8 „
„ 40 = 11·6 „
„ 50 = 10·8 „
„ 60 = 8·9 „

Table III.—Mortality among intemperate spirit and beer drinkers :—

Spirit drinkers	5·996 per cent.	(nearly 60 per 1000).
Beer drinkers	4·597 „	(nearly 46 per 1000).
Spirit and beer drinkers	6·194 „	(nearly 62 per 1000).

After the most careful investigation, life insurance companies have settled down to the conclusion that those who absolutely abstain from the use of alcoholic stimulants in every form average sixty-four years of age, while the average life of drunkards and moderate drinkers is thirty-five and a-half.

The best thing to be done now seems to

be to point out clearly the exact physical relations of alcoholic potations to the human frame. From what has been said, it is plain that the habitual use of large quantities of alcohol is a deadly sin against the brain and its dependencies. The results of an occasional debauch are far less serious to the man or woman than are those of habit-

ual slight intoxication or "befuddling." Whether there be or be not moral danger in the occasional drinking of "a social glass," certainly, if the process be not repeated too often, no physical ill results to the man himself. It is the habitual everyday use that is dangerous.

Even when the daily tippie never reaches the point of slight intoxication, it is fraught with evil. Especially is this so if a strong liquor be used in an undiluted form and upon an empty stomach. A dram taken in the middle of the morning, amounting to two or three ounces of whisky, is far from serviceable. The man who requires a couple of ounces of whiskey or brandy before breakfast upon rising, has travelled some distance on the road towards alcoholic ruin.

The effect of an occasional excess may be worse for the offspring than for the parent. A child begotten during a debauch would be very apt to be idiotic or epileptic, although the father had been sober for many years previously.

It is by no means clear that any evil results are produced by the habitual employment of small quantities of well-diluted alcohol, as beer or wine. Only a few truths can be affirmed with certainty. It may be assumed as demonstrated, that in the young and vigorous man, not overworked, and supplied with plenty of good food, alcohol is not in any sense a necessity, and, if in the least excess, does harm.

It tends to provoke appetite, and promote digestion when too much is already eaten and digested. It tends to limit tissue-waste, whereas in health tissue-changes rarely, if ever, proceed too fast. It is plain that to the sedentary person, whose unused muscles require little food and waste too slowly, alcohol is doubly dangerous.

The use of wine is more apt to be injurious to the clerk than to the peasant, to the dweller in the city than to the roamer on the mountains. The old English squire was able to get drunk every night through a long life, because every morning he galloped madly twenty or thirty miles across the country after the hounds. The violent

exercises renewed his tissues, used up the surplus food, flushed the glands which are the sewers of the system, and washed out, through sweating skin, the excess of alcohol and the impurities produced by it, and thereby prevented his sensuality from having a worse effect than an occasional attack of the gout.

To those whom hard fate deprives of a supply of proper food, we believe that alcohol, in the form of beer or any very light wine, is a great boon. It renders the bit of bread and cheese almost a sumptuous meal, it aids the digestion of coarse food which might otherwise be a load to the stomach, and, like tobacco, takes off some of the edge of physical hardship. Wherever the food of the masses is very restricted in variety, or very scanty and unwholesome, life without wine or beer would, seemingly, be harder than at present. But in all cases where the people have an abundance of good food, alcoholic beverages are unnecessary to the young and vigorous.

Stimulants and Narcotics, Whether to Use or not.—

Have stimulants and narcotics, on the whole, been a benefit to the human race? The scope of this question will be better perceived by varying somewhat its phraseology. Is the *average* result of the use of these agents on the human family beneficial? Are the undoubted and terrible evils that, in numerous individual cases, come from some of them in many countries—and which in some sections and orders of society are certainly increasing—counterbalanced by the pleasure and profit that is derived from cautious and temperate indulgence in them? To this general question it is, perhaps, impossible to give any other than a negative answer.

There can be little doubt that the evils of intemperance far exceed the benefits of a moderate use of alcohol, and one can fully appreciate and admire the philanthropy of that devout Brahmin who, it is said, recently undertook to convert the benighted Christian world to Buddhism, in order to

save it from the beastly vice of habitual intoxication. To those who will, and still can, take counsel, it might be fairly said, never swallow a drop of alcohol in any form, except upon the written prescription of a reputable physician.

When the stimulus of alcohol is required in disease, it is no doubt better to secure it through pure wines, such as those of France, Germany, or Greece, than in the saccharine compounds presented to us from Spain and Portugal. If larger quantities of alcohol are required in disease, it is better presented in the form of brandy or whisky. The latter spirit is now sold so pure that it may, without hesitation, be used in the sick-room as a substitute for strong wine. A theoretic objection has been urged against the use of spirits and water. It is said that the stomach, through the action of endosmosis, absorbs the water and leaves the spirit to act as an irritant on the stomach and surrounding organs. This is said not to be the case with the alcohol and water in wines, where the two are held in a much closer chemical union.

Stimulants in Old Age.—The question as to the utility of stimulants in old age naturally presents itself for consideration. Ought spirituous liquors to form a part of the dietary of the aged? Does their use in what is called moderation tend to prolong life? While not denying the fact that many who have employed alcoholic drinks moderately have attained to great age, there can be no doubt that many who have been total abstainers have lived to a great age also, and the longest period of human existence is perfectly compatible with complete abstinence from intoxicating liquors. The best beverage is undoubtedly water, and they who use nothing else are more likely to attain to a ripe old age than if they had used alcohol in any of its various forms. While this is true, it is also true that better health is likely to be enjoyed without than with the use of spirituous drinks. It may be true that wine gladdens the heart of man, but it must also

never be forgotten that while it does so it produces certain tissue degeneration, and may very materially shorten the duration of life. The popular idea that alcohol is necessary for the aged, to promote heat, is one that is perfectly erroneous, inasmuch as the principal action of this agent is to lower, not to raise, the bodily temperature. Again, it is argued that in old age the circulation is feeble, and some extra stimulus is necessary; but the state of the vascular system at this period of life must never be forgotten, and anything that causes the heart's work to be increased may be fraught with danger at this time. It may be asserted, therefore, that the period of old age will be more likely to be prolonged, and that the health will be maintained longer in a state of soundness, without than with the use of alcoholic drinks in any form.

Stimulants, When desirable.—

A word in favour of stimulants has been said by Mr. Hamerton in his deservedly popular "Intellectual Life." "The wisdom," he remarks, "of occasionally using these various stimulants for intellectual purposes is proved by a single consideration. Each of us has a little cleverness and a great deal of sluggish stupidity. There are certain occasions when we absolutely need the little cleverness that we possess. The orator needs it when he speaks, the poet when he versifies; but neither cares how stupid he may become when the oration is delivered and the poem set down on paper. The stimulant serves to bring out the talent when it is wanted, like the wind in the pipes of an organ. 'What will it matter if I am even a little duller afterwards?' says the genius. 'I can afford to be dull when I have done.' But the truth still remains that there are stimulants and stimulants. Not the nectar of the gods themselves were worth the dash of a wave upon the beach, and the pure cool air of the morning."

Stimulating and Detergent Lotion.—*See* LOTIONS.

Stimulating Liniment.—*See* EMBROCATIONS.

Stimulating Liniment, Strong.
—*See* EMBROCATIONS.

Stings of Bees and Wasps.—

In the case of stings of bees and wasps, stimulants, such as brandy and water, or sal-volatile, should be at once administered if absolutely necessary, and the seat of injury should be carefully searched for the sting, which is generally left in, whilst the wound should be treated with sal-volatile, vinegar, eau de Cologne, sweet oil, ammonia, or the juice of an onion.

Supposing the throat be stung in drinking, there is, of course, great danger of suffocation, and leeches may be applied outside the throat, and a gargle of hot salt and water used immediately, and medical attendance sought at once.

Stings of Insects.—*See* INSECTS, STINGS AND BITES OF.

Stitch, or Pain in the Side

(*A.-S. stician*, to prick).—This is generally symptomatic of some disorder in the lungs or digestive organs, when it is to be removed by the means usually employed to restore these viscera to a healthy state; but sometimes it is not clearly connected with any primary affection of those parts, or, if so connected, it is found to be so troublesome a symptom as to call for particular attention.

When it does not occur symptomatic of disorder in the lungs or stomach, it is usually occasioned by chronic inflammation of the pleura—that is, the membrane lining the cavity of the chest; by habitually forcing the chest in writing against the hard edge of a desk, or by the use of tight stays. If the patient has reason to consider it to be owing to either of the last two causes, he may generally regard it as depending on the inflamed state of the pleura, especially if the pain is increased on pressure, and on taking a deep inspiration.

Should close application to writing, or the use of tight stays, have given rise to this pain, it will of course be absolutely necessary that these causes are avoided in future. Without this no great or permanent benefit can be gained from the prescriptions of the physician, but with it the means prescribed by the doctor will seldom fail to remove the complaint.

When pain in the side is associated with a deranged state of the stomach and general health, and there is a good deal of general languor and debility, a pill composed of a grain of calomel with the same quantity of James's powder and opium every night, will, for the most part, be found useful, with which some mild tonic medicine ought to be given during the day.

Stomach, The (*Lat. stomachus; Gr. stomachos*; from *stoma*, mouth).—The stomach is our reservoir for food and drink. Its office is to convert the food into chyme. For example, a mass of bread comes down into the stomach. Shortly after its entrance it begins to move about. This is accomplished by a peculiar motion of the stomach. As this mass of bread is pushed about from one part of the stomach to another, it soon begins to undergo a change, and in about a couple of hours it changes into a fluid resembling butter-milk. That is chyme. This change constitutes the principal office of the stomach.

"The stomach," says Kitchener, "is the centre of sympathy. If the most minute fibre of the human frame be hurt, intelligence of the injury instantly arrives, and the stomach is disturbed in proportion to the importance of the member and the degree in which it is offended."

Stomach and Brain, Sympathy between.—There is a wonderful sympathy between the stomach and all other parts of the body. But that between the stomach and the brain is so active and perfect that the acutest physician is often greatly puzzled, in trying to decide, when one is sick, whether the one or the other

is really to blame. Nothing is more common, for example, than to meet a long-standing case of dyspepsia, in which the prominent, and almost the only symptom, is a dull and fretting headache; while persons have suffered many years from what they believed to be a grave organic disease of the stomach, pointing to their stomachs on their death-beds, and saying, "You will find my stomach one mass of cancer," but when the curious medical man makes an examination, he finds a healthy stomach, better than the average, because of an abstemious diet; but in the brain he may

in a small pumping apparatus, to which is attached a long elastic tube, of sufficient length to be passed down the gullet into the stomach. This tube, at the point where it passes into the mouth, is usually guarded from the action of the patient's teeth by a perforated gag of wood. The stomach pump, though not used so frequently and indiscriminately as in former days, is, however, an invaluable and indispensable aid in the treatment of cases of poisoning by opium and other narcotics, and of extreme drunkenness caused by poisonous quantities of spirits. It may be laid down as a general



THE HUMAN STOMACH.

come upon evidence of long-standing and serious disease.

The sympathy between the brain and stomach is so complete that an experienced physician never examines a case of disease of one of these organs without making the other one likewise the subject of study.

Stomach, Pain in the.—See PAIN IN THE STOMACH.

Stomach, Powder to Allay Sickness arising from Irritable Condition of.—See POWDERS.

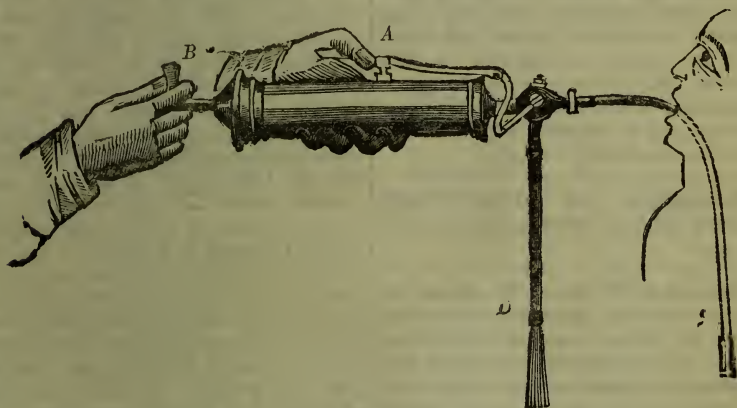
Stomach Pump.—“The stomach pump,” says a medical authority, “consists

rule, that the stomach pump ought always to be used when the patient, under the influence of a narcotic or alcoholic poison, is too much exhausted or too insensible to swallow emetics or antidotes, or where, as in cases of attempted suicide, he obstinately refuses to swallow. One or two pints of lukewarm water should first be pumped into the stomach, and then be withdrawn with part of the contents of the stomach and of the poison. This process should be repeated until the injected water, when pumped back again, is found to be clear and colourless. Very often, however, the simple introduction of the stomach pump, or the presence of a small quantity of warm water, will cause vomiting; but in cases of intense

narcotic poisoning, the stomach is generally insensible to the pressure of the tube, and requires to be well washed out. When in cases of poisoning the patient is able or willing to swallow, and vomiting can be produced by the frequent administration of warm drinks, the stomach pump ought not to be used. This instrument is not always a harmless one, and when used by inexperienced hands, and in circumstances exciting haste and confusion, may do considerable mischief. The mucous membrane of the throat, gullet, or stomach may be wounded by the violent introduction of the

stomach are being withdrawn. This occurs only in cases where the inner coat of the stomach has been softened by some corrosive agent, and on this account it has been laid down as a rule that the stomach pump ought not, except under special circumstances, to be used in cases of poisoning by the mineral acids."

The accompanying illustration represents the stomach pump and enema combined. The tube of the stomach pump is represented in the figure as inserted into the stomach of a patient. The syringe has been filled and the stop-cock closed, so that



THE STOMACH PUMP.

tube, and some bleeding from the raw surfaces may be produced. A more serious accident is the introduction of the tube into the air-passages instead of the gullet and stomach. A case has been recorded in which, after death from sulphuric acid poisoning treated by the stomach pump, the windpipe, bronchi, and large portions of the spongy tissue of the lungs were found choked and plugged with chalk mixture, which it had been intended to introduce into the stomach. Another danger attending the use of the stomach pump is laceration of the mucous membrane of the stomach, strips of which are drawn into the orifices of the tube as the fluid contents of the

none of the fluid can again return to the stomach. *A* represents the handle so turned as to admit of the fluid passing away from the body of the syringe out at the extremity of the second tube, *D*; *B* is the handle.

Stomach, Ulceration of the.—
See GASTRIC ULCER.

Stone Cutters, Ills of.— Stone-cutters, especially cutters of mill-stones, suffer greatly from this kind of consumption; and so do potters. In grinding the materials for earthenware and porcelain and glass, a great deal of the most injurious dust escapes.

Stone Fruits.—The chief stone fruits are the cherry, the plum, the apricot, and the peach, which are all characterized by the presence of a hard seed with the fleshy pericarp. This seed contains an edible kernel, generally rich in oil, and having an aromatic and somewhat bitter taste. Stone fruits have been denounced as the least digestible species by popular acclamation, and many of us are inclined to acquiesce in the truth of the assertion as a general proposition; but much of the mischief that has been attributed to their use has arisen from the unripe state in which they were eaten. They are, however, certainly less digestible than other species, and more liable to undergo fermentation in the stomach. The hard pulp of certain plums remains also in the alimentary canal for a long time, and is frequently passed without having been materially changed.

Stoppage of Respiration, Effects of.—See OVERCROWDING, DANGER OF.

Storage of Water.—The storage of water in the house should carefully be attended to. Cisterns require special care and watchfulness, as there is no doubt that a multitude of deaths are due to neglect of very simple rules in regard to them. In the first place, when used for rain water or any very pure spring water, they should never be made of lead or lined with this metal, because the freer the water is from saline impurities the more certain it is to act on the lead, and, by dissolving it, become poisonous. The proper material is slate; but brick or stone, lined with cement, or in some cases galvanized iron, may be employed. Under no circumstances should the overflow communicate with a drain which serves to convey away refuse fluids from sinks, water-closets, etc.

The cistern should be supplied with a tightly fitting cover to exclude dust and dirt as far as possible; but this cover should be arranged so that it may readily be removed to allow inspection of the interior.

Such inspection should be rigidly made at short intervals, as rats, mice, and other vermin seek out and penetrate into cisterns in search of water, and being apt to drown in it, often cause serious illness by the decomposition of their bodies in the fluid drunk by the household. No water intended for family use should be preserved in a cistern occupying the same room as a water-closet, nor should it be brought to the reservoir from the roof or from a pump in leaden pipes. The same caution in regard to leaden service-pipes is important.

In connection with cisterns, a sensible suggestion which was originally made in the *Lancet* may well be repeated. When the family is from home, a writer in that periodical points out, the cisterns are seldom emptied; a small quantity only is withdrawn every day, generally from one cistern—the most accessible—the others being left unused. Consequently in these the water becomes stale; and even in the favoured cistern the quantity of fresh water admitted daily is too small, in proportion to the stale water left unused, to be either agreeable or wholesome. The family returns to town after many months' absence, and the water in these cisterns is, in many instances, used by them when it must be in a very bad condition from long storage. Householders should give injunctions to their servants, or those left in charge, to draw off the water in all cisterns in the house at least once a week during their absence, and before returning to have the cisterns themselves thoroughly cleaned out. By doing this they will insure a wholesome and fresh supply of water for themselves, and the water poured into the house-drains in considerable quantities by these weekly flushings will keep them clean and sweet, and carry off any impurities or sewer-gas that may collect in them. They will also benefit their neighbours by returning to the main sewers a quantity of water for flushing at a time when it is much required.

In entering a new house, no water should be used for drinking or cooking from new lead pipes for at least one month after the

water has been otherwise used daily. Even when pipes have been long in use, water that has been standing in them had better be run off before any is used for drinking or cooking. Tin is sometimes used as a lining for lead pipes, although not so generally as might be desired, for, unlike lead, tin neither dissolves in nor poisons the water.

When for any reason the water kept in cisterns of doubtful purity has to be used temporarily, the danger of its causing disease may be much diminished, as we have already suggested, by boiling every drop for half an hour shortly before it is drunk, also by filtering through animal charcoal. It should be always borne in mind that if cholera, cholera-infantum, typhoid fever, diarrhoea, or dysentery, appear in the members of a household without obvious cause, *the chances are, at least two to one, that there is something wrong with the water supply, the milk supply, or the drainage of the house itself.*

Every vessel, large or small, used in keeping water, should be cleansed thoroughly and often, or you may get living animals in the water, or dead animal matters, which are often worse for health. Water-vessels should always be covered, not tightly, however, so as to keep out the air, but so as to exclude dust. No cistern or butt should have a waste-pipe connected with a drain or sewer, for the poisonous air from the sewer or drain will find its way thus into the water, will be absorbed by it, and will cause it to be poisonous and unwholesome. In the same way the bad air from a water-closet may spoil the water of the cistern supplying it. Water for drinking should never be kept in close cellars, in badly aired or crowded rooms, or in the chambers of sick persons. For use by invalids, fresh water should be often brought in, and kept closely covered till wanted.

"Is it common sense," asks a medical writer, "that you should store up water in your cisterns, into which cobwebs and street dust, insects, and other animals, find their way, and in which I have known the dead

body of a mouse or rat to be found? Is it common sense that you should buy clean food and then cook it with water which has even stood for a single night over such deposits in your cisterns? That is one way in which people abuse water introduced into their houses in purity."

Stout.—*See* BEER.

Strabismus.—Strabismus, or squinting, is frequently produced by a partial paralysis of that muscle, the office of which is to turn the globe of the eye in the opposite direction, or it may arise from undue contraction of the muscle on the same side.

Strangulated Hernia.—*See* HERNIA, STRANGULATED.

Strawberry.—This is a fragrant, cooling, and wholesome fruit. It is highly tender, and easily digested. Though taken in large quantities, strawberries seldom disagree. They impart a violet smell to the urine. They are laxative in a certain degree, and promote, indeed, all the evacuations.

Those labouring under gout and gravel, it is said, have been relieved by them, and some physicians have found them useful in consumption. A variety of species of them are met with in modern gardening, but the wild or natural kind possess still the highest degree of flavour. On what grounds they are alleged to be so efficacious against gout and gravel, we cannot perceive; but were it established, it is clear, a remedy so innocent and plentiful would surely not be neglected. The accumulation of the seeds of this fruit in the bowels, thereby producing constipation, may be considered as barely probable, from the short time during which the fruit is in season to be eaten. Strawberries are used in different ways; they are either eaten with cream and sugar, which is perhaps the most wholesome method, or they are eaten with wine, the strength of which destroys their flavour, as well as tends to heat the body too much.

Street Accidents.—In large and populous cities a day rarely passes in the course of which certain accidents do not occur. Under ordinary circumstances the injury in the majority of cases is caused by the individual being knocked down or run over by a vehicle. Occasionally the accident consists in the fall of a ladder, or of some smaller object detached from the front of a house, or dropped from a window. In many cases, again, the cause of the injuries may be a slight fall, an inadvertent step, or carelessness on the part of the individual. In the first class of accidents the injuries vary much in nature and degree; they may be restricted to slight bruising, or to simple wounds of the scalp, or may consist in simple fracture of one or more limbs, in severe compound fracture with much comminution of the broken bones, and in rupture or laceration of internal organs, as the stomach, liver, or kidney. The most severe of street accidents are those caused by tramway cars, which have recently been introduced to so great an extent in London and other large towns. The passage of one of the wheels of a vehicle of this kind across a limb causes a very bad compound fracture; the skin is stripped away over a considerable portion of the limb; the muscles are torn and bruised, and the bones of the limb are each broken into several pieces. The extreme severity of these accidents is due to the weight of the vehicle, and the size and peculiar conformation of the wheel. The injuries caused in accidents of the second kind also vary much in character; in the majority of instances they consist in cut head, and contusion or fracture of the bones of the skull. The two most frequent of the injuries which are due to falls and slips on the part of the individual, are simple fracture of the neck of the thigh-bone, and fracture of the splint bone of the leg just above the ankle. The former injury usually occurs in people over sixty years of age, and is caused by a slip off the edge of the pavement; the latter is often produced by an individual stepping out of an omnibus which is still in motion. Under certain unusual

conditions, as during a heavy frost, and with overcrowding of the streets in the event of a state procession, an illumination, etc., the number of street accidents is very much increased. Those caused by a slippery state of the streets result generally in simple fractures and injuries to the scalp or head; those caused by overcrowding, in compression of the abdominal or thoracic organs, and fracture of the breast-bone and several ribs.

With regard to coach or carriage accidents, should the horses run off, in defiance of all restraint, those who are in the vehicle, be it what it may, should sit perfectly still; and in anticipation of the possible overturn, keep their legs and arms from straggling. They should, indeed, sit easily and compactly, so that, when upset, they may gently roll over in the direction in which they are thrown. Ladies in these circumstances generally scream wildly, and throw their arms out of the windows, thus exposing themselves to the chance of broken limbs. If run away with in a gig, it is better to sit still collectedly, or drop down behind; if the latter course be chosen, endeavour to run for a short distance by holding on to the back, and then let go and be prepared to fall on the hands. Persons should never jump from a rapidly moving vehicle, unless—supposing it impossible to slip down behind—they see a precipice in front, in which case it is better to get out at all hazards.

Strength of Hair.—See **HAIR**, **STRENGTH OF**.

Strength of Muscles.—Although the strength of muscles to a great degree depends upon individual peculiarity, it is, nevertheless, within certain limits, very much under the influence of modifying circumstances. Provided a human being or other animal is in good health, the muscles increase in strength when called into frequent exercise; and those muscles which are principally exercised, provided their efforts are not pushed to an injurious extent, acquire a considerable increase in size and firmness. This is seen in the arms of smiths

and boatmen, and in the legs of those who have much exercise in running and jumping.

Strengthening Pills.—See PILLS.

Stricture (*Lat.* *strictus*, drawn tight; from *stringo*, I bind).—Stricture, or contraction of any of the natural passages in the body, may occur as the effect of disease or injury; but by the term *stricture*, in its general sense, is meant that affecting the urethra, or channel by which the urine passes from the body. Stricture of the urethra may be either spasmodic or permanent.

Stricture, Permanent, Causes of.—Permanent stricture, or, as it is called, organic stricture, is a contraction of the urethral canal in one or more places, owing to the infiltration of plastic effusion, and a fibroid degeneration of the tissues. A constriction is thus produced, varying in tightness, in some cases almost completely blocking up the canal, whilst in other and simpler ones it is very slight. Occasionally a fibrous band is found stretching across from one side of the canal to the other, forming what is termed a *bridle* stricture. Organic strictures are generally situated in that portion of the urethra just in front of its bulbous portion; frequently they are found nearer the orifice.

The most frequent cause of stricture is neglected gonorrhœa, and perhaps the ill effects of improper remedial agents; patients frequently treating themselves, or getting into the hands of quacks. Stone in the bladder and injuries of the urethra may also be cited as causes.

Stricture, Permanent, Symptoms of.—The symptoms of an organic stricture are: difficulty in micturition, small stream of urine (generally forked or dribbling), pain during the act of making water, and frequent desire to do so.

Stricture, Permanent, Treatment of.—The treatment consists both of

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constitutional and mechanical means. As far as regards the constitutional, any stomach disorders, irritating urine, or inflammatory tendency must be removed, and temperance, rest, early hours, warm baths and alkaline remedies will do much towards assisting such mechanical means as may from the nature of the case be deemed necessary.

The mechanical treatment of stricture is of such importance that experienced surgical advice must always be taken as early as possible; and we can do little more in a work of this nature than refer to some of these methods. In the first place, the strictures may be dilated by bougies, expanding instruments, a catheter retained in the bladder, caustics, incisions or external division. The bougie is frequently advised to be used by the patient himself, after having been instructed in the method of using it; it must be flexible and strongly made, to avoid its breaking in the passage. By the introduction of bougies of gradually increasing thickness, distension is combined with compression, and by this means the ring-shaped cicatricial constriction of the urethral canal is frequently overcome; and, if applicable to the case, this constitutes by far the most satisfactory course of treatment.

The treatment by expanding instruments consists in the introduction of some appliance, whereby mechanical distension is obtained, either sudden or forcible, or gentle and gradual. Many ingenious methods are in use, and are more or less effective in different cases and in different hands. Treatment by the retention of a catheter in the bladder is of value in cases of hard, gristly cartilaginous strictures, and in cases of false passage. It consists in tying a small catheter in the bladder, and subsequently a larger one, until the stricture suppurates and becomes dilated. Caustics are occasionally applied to the canal by instruments specially adapted, called *porte caustiques*; lunar caustic or nitrate of silver is the agent employed. Division of the constricting portion is effected in some instances by internal section, some contrivance being intro-

duced carrying a cutting edge, such as the urethrotome. The urethra has, in some cases of complication, to be opened from without, in order that the urine may come away; the operation by means of which this is effected is termed perineal section—an operation requiring great manipulative skill and considerable patience on the part of the surgeon.

Stricture, Spasmodic, Causes of (*Gr. spasmos, cramp*).—Spasmodic stricture is of frequent occurrence in persons who have an irritable urethra, so rendered by repeated attacks of gonorrhœa, or who may have some slight organic stricture, and the symptoms are liable to come on after too much drink, irritation of the lower bowel from piles, etc., getting wet, horse exercise, or some unnatural condition of the urine. An inability to pass water after a too-long voluntary retention of the urine in the bladder must be distinguished from permanent stricture, as it depends upon spasm of the neck of the bladder or urethra, from some such cause as above.

Stricture, Spasmodic, Symptoms of.—The symptoms of this painful ailment are as follows: the individual has a great desire to pass water, and on straining finds himself unable to do so; the bladder becomes distended, and appears as an increasing tumour above the pubis, and, if not relieved, the continued efforts at evacuation may terminate in rupture of the urethra and extravasation of the urine.

Stricture, Spasmodic, Treatment of.—In such cases of stricture, especially those arising from debauch of any sort, and when such symptoms have not previously existed, a hot hip-bath and a good dose of opium cause speedy relief. Tincture of iron, in ten-drop doses every ten minutes, is often of use. If the symptoms still continue, the catheter must be passed, and a large one used, for choice, a No. 8 or 9.

Stridor in Croup (*Lat. stridor, a whistling cry or noise*).—In cases of spasmodic approximation of the vocal bands, as occurs in certain cases of false or spasmodic croup, and in a number of diseases of the upper portion of the air-passage, this unnatural vocal sound is actually produced at every forcible effort of inspiration, and constitutes a specially alarming and heart-rending sound, which is known as *stridor*.

Structure of Lungs.—See LUNGS.

Study, Food and, for Children.
—See FOOD AND STUDY FOR CHILDREN.

Sty in the Eye.—See BOILS.

Style of Walking.—See WALKING, STYLE OF.

Subcutaneous Cellular Tissue.
—See CORIUM.

Subjective Sounds (*Lat. subject'us, cast under; from sub, under; jactus, cast; from jacio, I throw*).—Subjective sounds, as they are called—i.e., those sensations of sounds which have no external cause—depend upon a pressure of blood-vessels upon the auditory nerve. All students know the singing in the ears which accompanies overwork of the brain; and all persons who have attended reviews, or made long and noisy journeys in rattling vehicles, will remember the continuance of the sounds long after the original cause had ceased.

Suckling, for whom Undesirable.—However anxious some mothers may be to bring up their offspring at the breast, it may be absolutely necessary, both for their own and their child's safety, to forego this privilege. Frequently when a parent continues to suckle her child after the medical attendant has prohibited her doing so, she undermines her own health and induces a weakly habit of body in her infant. The first class of those who ought not to suckle their children embraces such

as are consumptive. Any mother who has an inherited tendency to this disease runs a great risk of imparting the same to her child if she bring it up at the breast. She, therefore, who is so circumstanced will be acting most kindly by her offspring if she do not attempt to nurse it herself at all. The best thing undoubtedly to be done in such a case is to procure a strong and vigorous wet-nurse for the child. By so doing, advantage is given the child of obtaining nourishment from a healthy source, which will go far to improve its general health; and, by laying the foundation of a stronger constitution, may do away, in great part, with any taint which the child may have inherited at birth.

There is another class of women who ought not to suckle their children, embracing those who are nervous and excitable. The influence of the mind upon the milk secretion is very great, and anything that exerts a greatly disturbing influence upon the mother will affect her milk in such a degree as to cause it to be dangerous, perhaps even fatal to the child.

In addition to the two classes already noticed, there is yet another, including those whose nipples are so depressed that they are obliged to give up all attempts at nursing. As this is frequently the result of carelessness, every female should be on her guard during pregnancy to see that the corset does not press injuriously upon the breasts. Of course, when the nipples are so depressed, means should be employed to elevate them and render them fit for nursing, ere the mother give up all attempts to suckle her child. Should they on being tried prove ineffectual, a wet-nurse must be sought for the child, or it must be hand-fed. Lastly, there are some women who are debarred from bringing up their children at the breast owing to some natural defect in the nipple, which cannot be overcome by any means that is within the power of the physician to employ.

Suckling, Protracted.—The earliest symptoms for the mother are a drag-

ging sensation at the back when the child is in the act of sucking, and an exhausted and sinking feeling at the pit of the stomach afterwards. Then come loss of appetite, costiveness, pain on the left side, giddiness, depression of spirits, palpitation of the heart, profuse perspiration, and weakness of the retina. These symptoms, if unchecked by promptly stopping the nursing of the child and an effort to build up the system, often result in temporary insanity.

It is easy to understand from this how criminal a thing it is towards mother and child when suckling is permitted beyond the evident ability of the woman. Physicians are not a little to blame for this condition occurring with women who have been under their care, and in whom, had they been sufficiently observing, they might have detected very early indications which prohibited suckling.

Sudden Noises.—A sudden noise excites in persons of excitable nervous system an unpleasant sensation, like that produced by an electric shock, throughout the body, and sometimes a peculiar feeling in the external ear. Various kinds of sounds, such as the friction of paper or scratching of glass, cause in many persons a disagreeable feeling in the teeth, or, indeed, a sensation of cold trickling through the body. Intense sounds are said to make the saliva collect in the mouth in some persons.

Sudoriparous Glands (*Lat. su'dor*, sweat; *pario*, I produce; *glans*, *glandis*, an acorn).—The sudoriparous or sweat glands are in the form of tubes of about $\frac{3}{16}$ of an inch in diameter, which are twisted into coils at the very deepest portion of the corium, or true skin, or even in the subcutaneous tissue, and then extend through the entire thickness of the skin, and open on the surface. The openings of the sweat glands are arranged somewhat regularly, and may be seen with a magnifying glass, especially on the palms of the hands, in rows between the slightly elevated ridges of the skin, as shown in Figs. 1 and 2.

These glands are very numerous in some parts; on the sole of the foot and palm of the hand there being about 2,700 in each square inch, while on the cheeks there are but about 550 in the same space, and on the forehead about 1,250. According to careful computation the total number of sweat glands in the body amounts to almost 2,400,000, and as each little gland when its

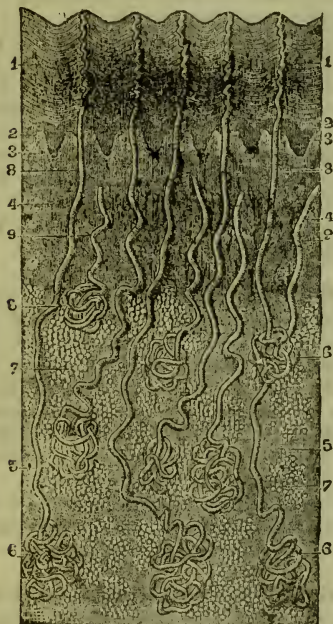


FIG 1.—SWEAT GLANDS FROM THE PALM OF THE HAND.

coil is unravelled would measure about $\frac{1}{5}$ th of an inch, their entire length amounts to not less than 153,000 inches, or about two and a half miles. The very great importance of the skin as a secretory organ will be readily understood when the vast surface thus presented is considered.

The sweat glands from the palm of the hands, magnified twenty times, are shown in Fig. 1: 1, horny layer of epidermis; 2,

rete mucosum; 3, papillary layer; 4, derma, or true skin; 5, subcutaneous cellular tissue; 6, 8, 9, sudoriparous or sweat glands.

In Fig. 2 are shown the openings of the sweat glands on the palm of the hands magnified four times: 1, openings of glands; 2, furrows between the lines of openings.

Sudoriparous Glands, Action of.—The action of these minute glands is not intermittent, but continuous; during the entire time sweat is exhaled in the form of vapour, or *insensible perspiration*; and only when the body becomes much heated, as by exercise or otherwise, does the perspiration manifest itself to the eye and

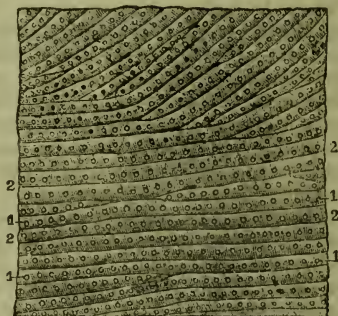


FIG. 2.—OPENINGS OF THE SWEAT GLANDS ON THE PALM OF THE HAND.

touch. The total quantity of fluid thus given off by the skin is subject to the greatest variations, according to temperature, moisture, exercise, quantity and quality of food and drink taken, etc. In the average person in health, however, careful experimenters agree in placing the amount at about two pounds, or pints, daily, a quantity almost equal to that excreted by the kidneys.—See PERSPIRATION, OFFICE OF.

Suffocation (*Lat. suffoca'tus*, choked; from *suffo'co*, I choke; from *sub*, under; *fauces*, the jaws).—Suffocation may take place either from exposure to some noxious air, or from the exclusion of air altogether.

Instances of the former kind are not uncommon from inconsiderate confinement in rooms heated by charcoal; from persons falling asleep very near to, or upon, kilns of burning lime; or from incautiously venturing into common sewers, or wells, without first ascertaining the state of the air by the test of lowering a lighted candle. The most common occurrence of the second species of suffocation is when an infant is, from carelessness or ignorance, so covered with bedclothes, or overlaid by the nurse, as to exclude the access of fresh air to the lungs. In all cases of suffocation the treatment is the same as before described in cases of drowning, with this additional observation, that the recovery is frequently expedited by first exposing the body to the air, and frequently dashing cold water over it.

When called to a person found dead, or apparently dead, where the probability of drowning, hanging, and suffocation is entirely out of the question, and where no marks of external violence can be discovered, you will be led to expect intoxication; and if there is a smell of spirits, or other fermented liquors, about his person, your suspicions will almost amount to certainty, and particularly so if you discover proofs of his having recently thrown up the contents of his stomach, and if these, again, emit the odour of beer, wine, or spirits. In such a case you should place the head in a natural position, throw water in the face, endeavour to administer an emetic, and then, if there be no signs of life, use all the means above recommended for the recovery of persons recently drowned. The immediate cause of suspended animation, or death, in such cases of intoxication, is sometimes apoplexy, and sometimes syncope or fainting. When a purple and bloated countenance, with blood-shot eyes, indicate the former, an attempt should be made to bleed in the arm, or, if a surgeon be at hand, in the jugular vein; if, on the contrary, the countenance be pallid, warmth, stimulants to the nostrils, and the occasional dashing of cold water, should be the expedients first resorted to.

Sugar.—Sugar is a highly nutritive and fattening principle, and therefore becomes not only a pleasant and attractive, but salutary addition to many other articles of food. It is said that workers in sugar plantations, notwithstanding their arduous labours during the gathering and preparation of the sugar-cane crop, generally gain instead of lose flesh at that season, in consequence of the abundant use which they make of sugar at such times. It is very essential, however, that this principle be not taken either in unlimited quantities or in a state nearly approaching to purity. Every one whose stomach is at all delicate must be



SUGAR-CANE. (*Saccharum officinarum*.)

well aware of the great disposition to acidity produced by the too free or even by a sparing use of sugar. Its injurious tendency, as an exclusive article of food, has been most distinctly shown by some very interesting experiments of Professor Majendie. He caused some dogs to be fed exclusively on well-refined sugar. The dogs, by previous habit, had become accustomed to this unnatural food, and had even acquired a taste for it, which induced them to devour it with considerable avidity. For a while they appeared to enjoy their usual health, but ultimately their flesh and strength declined, and their eyesight began to fail. Small spots appeared upon the surface of the eye, which, if the experiment was protracted, led to

perforation of the eye and perfect blindness, and, finally, death ensued.

In moderate quantities sugar forms a most agreeable and, we have no doubt, a very wholesome addition to many fruits, and to many of our farinaceous and succulent vegetables, to which it may, for the sake of variety, be very properly added in the place of salt. It enters almost universally into our various forms of drink, which it contributes, more generally than perhaps any other principle, to render grateful to the palate. To many of our drinks it is purposely added with a view to the flavour, of which tea, coffee, cocoa, lemonade, etc., are familiar examples. Its presence is, however, no less necessary in those drinks into which it enters in conjunction with other principles, and in modes which render it less evident, such as beer, wine, cider, and milk.

Being of a soluble and diffusible nature, sugar does not need preliminary digestion for absorption, and therefore sits lightly on the stomach. It is, however, apt in some dyspeptics to undergo the acid fermentation, and give rise—as we have hinted above—to preternatural acidity of the stomach, and likewise flatulence.

A popular notion prevails that sugar has a tendency to injure the teeth, but no trustworthy evidence that such is the case exists.

This nutritive property of the raw juice of the sugar-cane arises from the circumstance that it contains, besides the sugar to which its sweetness is owing, a considerable proportion of gluten, as well as of those necessary mineral substances which are present in all our staple forms of vegetable food. It is thus itself a true food, capable of sustaining animal life and strength without the addition of other forms of nourishment. This is not the case with the sugar of commerce, which, though it in a certain sense helps to nourish us, is unable of itself to sustain animal life.

Sugar, Johnston on.—With regard to the sweet principle of various substances, Professor Johnston has said: "Of sub-

stances which are sweet to the taste, the chemist is familiar with many which have no relation to the wants or usages of common life. Sugar of lead is a well-known poison, which derives its name from the sweetness of its taste. Silver, in certain of its compounds, is equally sweet. A mineral earth called glucina produces many compounds which have a sugary taste when first put into the mouth; and numerous other instances might be named. It is only those sweet substances, however, which exist in, or are extracted from, plants that are directly connected with our modern comforts. These sweets not only accompany on our tables the beverages we infuse, but are the ingredients from which our brewers and distillers manufacture the liquors we ferment.

"Of these vegetable sweets, modern nations use many varieties. In such substances as luxuries of life we are indeed far richer than any of the ancient nations. Thus, to the honey, grape, manna, and fruit sugars, which were the principal sweets of the ancient world, we now add the cane, maple, beet, maize, and palm sugars. We manufacture sugar also from potatoes and other substances rich in starch; from seaweeds gathered by the shore; even from sawdust, when an emergency arises; and we extract it from the milk of our domestic cattle. It has become to us, in consequence, almost a necessity of life. We consume it in millions of tons; we employ thousands of ships in transporting it. Millions of men spend their lives in cultivating the plants from which it is extracted, and the fiscal duties imposed upon it add largely to the revenue of nearly every established government. It may be said, therefore, to exercise a more direct and extended influence, not only over the social comfort, but over the social condition of mankind, than any other production of the vegetable kingdom, with the exception, perhaps, of cotton alone.

"The numerous varieties of useful sugars with which we are acquainted may be arranged under four main kinds or heads. These are the grape sugars, the cane sugars,

the manna sugars, and milk or animal sugar."

Sugar, Where found.—Sugar is found in both plants and animals. It is taken as food in the form of cane or crystallized sugar, and grape sugar or glucose. The latter is found in all fruits. It is the only form which undergoes fermentation, and is the basis of all fluids containing alcohol. Sugar is found also in animals. The sugar of milk, although differing but little from grape sugar, has, nevertheless, a distinct composition, and, of course, is constantly taken where milk is used as an article of diet. Sugar is also found in the liver and the blood, and its increase in the system constitutes a disease called diabetes.

Suicidal Acts (*Lat. sui*, of himself; *cædo*, I slay).—Suicidal acts, or acts of self-mutilation, are frequently committed by the insane. In the form of insanity called suicidal melancholia, where from the depression of mind life has become unbearable, it is frequently hardly possible to prevent the patient from destroying his life. He will watch his opportunity for years, and the first opportunity is sure to be taken advantage of. Very frequently in these patients the homicidal is closely associated with the suicidal impulse. The subject of homicide, however, brings us to the consideration of those acts which are directed towards others rather than to the patient himself. Not unfrequently homicide or suicide is the result of overpowering terror. This perhaps is the most frequent form assumed in the insanity of drunkards. The patients in dread of their lives attempt to escape, and are killed in the attempt, or in their desperation and dread of attack turn upon the attendants and kill them. A goodly number of the murders committed by the insane are from delusions. A man thinks his wife and children are going to starve, and so thinks it better to kill them at once; or he fancies he has got a command from on high to sacrifice them, and does so. Yet, again, it may be done from sheer wan-

tonness, as by an imbecile. In all of these cases there is, as a rule, no difficulty in making out the insanity; it is not concealed, and may otherwise be only too apparent; but there is yet another group of cases, which are of much more doubtful category. It is well known that the great majority of confirmed epileptics sooner or later become totally insane. These constitute the very worst class of insane patients. Utterly untruthful, not a word can be depended on. Nor is an attendant's life safe with them. Before the onset of the epileptic fits, if they have them at intervals, they generally go through a state of excitement, in which they are exceedingly dangerous. Now the stage is sufficiently well marked long before the minds of the patients are so far gone as to require them to be sent to an asylum, and during these periods they are at any time liable to commit murder, and so it may be said of them just after such an attack. It is, however, with regard to paroxysmal insanity that there is most discrepancy between the opinions of professional men and the public at large. In the latter the idea is not pleasant that a man may go on all his life quietly and decently; yet suddenly an uncontrollable impulse comes on him to murder some individual, after which he returns to his normal state. Yet most physicians, who have studied the subject, are agreed that this is so; and it has now apparently been admitted by the judges.

Sulphate of Lime as a Purifier.—Sulphate of lime (gypsum, plaster of Paris), sulphite of lime, and porous clay are all valuable absorbents of ammoniacal gases and foul effluvia.—*See* COAL TAR, NATURE AND USES OF.

Sulphur, Confection of.—*See* ELECTUARIES.

Sulphur Ointment.—*See* OINTMENTS.

Sulphuretted Hydrogen.—*See* CESSPOOLS, EFFLUVIA FROM.

Sulphurous Acid (*Lat.* sulphur, brimstone).—Sulphurous acid is easily made by burning sulphur; it decomposes sulphuretted hydrogen, and acts powerfully on organic matter. This gas is extremely useful; a small quantity burned in the morning in a hall, or on a staircase, will purify a house very readily, and no disagreeable smell will remain; it is thus useful in a children's hospital or in a nursery wherever there is close air.

Summer, Light Clothes in.—See LIGHT CLOTHES IN SUMMER.

Sunburn.—Heat and cold alike, when sufficiently intense, produce inflammation of the skin. The direct rays of the sun, in which there is combined action of high heat and intense light, speedily bring about that group of changes in the skin of persons unaccustomed to such exposure that is called "sunburn." There is redness varying from a slight blush to an intense red, or even purple. If the exposure be not too great the redness gradually subsides, the smarting ceases, and nothing remains but a deepened colour at the surface. If the exposure be long continued, inflammatory symptoms cease, but the colour is deepened until the skin is bronzed, as seen in sailors, and soldiers after a summer campaign.

Very great exposure may, however, be followed by troublesome and painful symptoms in those whose skin is delicate. The redness is intense, the skin swells, blisters form, and the surface becomes raw, as if burned. The suffering attending this condition is often very great. It is, however, of short duration, and the malady tends to spontaneous recovery upon the avoidance of the cause.

Sunburn, Prevention of.—Preventive treatment consists in guarding against undue direct exposure as far as possible by the use of suitable articles to shield the face, neck, and other parts exposed, and especially by only a brief exposure to the sun for the first few days.

Sunburn, Treatment of.—When active inflammation has been excited, the application of soothing lotions is useful. Dilute lead-water is often employed. We have found very rapid relief follow the employment of the carbonate of soda in solution, of the strength of one to two drachms to the pint of water. These preparations are best used in the form of evaporating lotions, by means of masks or compresses of one or two thicknesses of cotton-cloth, which are to be wetted and re-applied as they become warm, for several hours at a time. Zinc ointment also often serves an excellent purpose. As the inflammatory process subsides and the skin begins to dry, bland ointments, such as cosmoline or zinc ointment, may be applied, or a dusting powder, such as rice-flour, starch, or fine rye-meal. Sunburn may occasion eczema in persons predisposed to that affection.

Sunstroke.—Sunstroke has been known from the earliest historical times. The reader will recall the graphic story of the child of the woman of Shunem, related in the Bible: "And when the child was grown, it fell on a day that he went out to his father to the reapers. And he said unto him, Father, my head, my head. And he said to a lad, Carry him to his mother. And when he had taken him and brought him to his mother, he sat on her knees till noon, and then died."

To the people of a "dry and thirsty land" the promise that the "sun shall not light upon them nor any heat," is rich in meaning, and the metaphor of the shadow of a great "rock," has a signification that we can scarcely comprehend.

Until very recent times sunstroke has been confounded, even by physicians, with a number of other diseases, among which may be mentioned continued and remittent fevers, to which many cases certainly bear a resemblance, and apoplexy of the brain, with which the more rapidly fatal cases have many symptoms in common.

Sunstroke is a very fatal affection. The conditions with which sunstroke is most

likely to be confounded are apoplexy of the brain, and insensibility produced by alcohol or other narcotics. A person walking in the street is seen to totter; he sits down and soon sinks to the earth, or he may fall at once; or a workman lets his tools drop from his hands, and in a moment falls to the ground. On examination he is found to be in a state of unconsciousness. He lies quiet, or there may be restlessness and, rarely, talkative delirium; still more rarely, he may be roused for an instant by shaking or shouting in his ear. There are other symptoms, but many of them would escape

the attention of an untrained observer; others might not at once appear. One is, however, constant, and most readily recognised. It is the intense heat of skin. It almost scorches the hand. This is of the utmost value as pointing to *coup de soleil*. Or the patient may have been found insensible, and his life may depend upon the prompt action of the bystanders. The discrimination of these conditions is then of the greatest practical value. A comparison of the principal symptoms, as arranged in columns, will be of service as fixing them in the memory.

APOPLEXY.

SUNSTROKE.

ALCOHOLIC INTOXICATION.

Attack sudden.	Attack sudden, but usually preceded by dizziness, disturbed vision, headache.	Insensibility comes on gradually after the stage of excitement.
Insensibility usually complete for a varying length of time.	Deep insensibility of shorter duration. Patient may often be roused by shouting or shaking.	Insensibility rarely complete.
Breathing stertorous. It is slow, irregular, and explosive in expiration.	Also snoring breathing. Apt to be rapid and laboured; noisy from presence of mucus in the upper air-passages; not explosive.	Respiration slow and snoring.
No convulsions.	Convulsions often recur. Twitchings of muscles.	No convulsions.
Paralysis of one side or the other.	No paralysis.	No paralysis.
Flushing of face.	Face often deeply flushed; or, together with the whole surface, it may be of a dusky hue.	Face dusky and bloated.
Pupils often uneven.	Pupils alike; immovable; they may be contracted, dilated, or about normal.	Pupils alike.
Pulse slow and full.	Pulse very rapid and sharp; often wanting in volume.	Pulse slow.
Skin cool and moist.	Skin intensely hot. Usually burning and pungent to the touch, and exceedingly dry. More rarely it is bathed in a profuse perspiration.	Skin cool and leaky.

Sunstroke, Causes of.—Intemperance is universally acknowledged to be a predisposing cause of sunstroke; so, also, are debilitating influences of every kind, particularly those of such a character as lower the tone of the nervous system and increase its irritability. Among the latter group of influences may be mentioned previous prolonged exposure to a high temperature, not in itself sufficiently intense to cause the disease, but having an unfavourable influence on the nervous system, and in this way impairing its powers of resistance; excessive fatigue, bad ventilation, at night especially; the febrile state and the debility following other diseases.

Owing to the different nature of the avocation of the sexes, the affection is very much more common among men than among women; and, in consequence, in part of their more delicate organization, and in part of their ignorance of danger, numerous cases occur among children.

Numerous writers concur in the opinion that the plethoric, or "full-blooded," are more liable to sunstroke than others.

Whilst the foregoing conditions are predisposing causes—that is to say, whilst they increase the liability to the disease—the sole exciting cause, that is, the cause which actually produces it, is heat, intense and prolonged. Hence, no class of persons exposed to its influence are exempt from danger, though the avoidance of the unfavourable conditions enumerated as predisposing causes diminish the danger *pro tanto*. It is in recognition of its absolute cause that the malady has been designated by such names as, heat apoplexy, heat asphyxia, sun fever, *coup de soleil*, *insolatio*, *ictus solis*, sunstroke.

That the direct rays of the sun, however, are not necessary to the causation of sunstroke is shown by the following facts. Soldiers are not infrequently seized after they have retired to their tents, and one writer states that out of sixteen cases, thirteen occurred in barracks or in hospital. On board the French man-of-war *Duquesne*, while lying at Rio Janeiro, one hundred

cases of sunstroke occurred in a crew of six hundred men. Most of the men were attacked, not when exposed to the direct heat of the sun, but at night, when in the recumbent position, that is, when breathing a hot and also an impure air. It is thus seen that the attack may not only occur at night, but that the affection is also encountered on shipboard.

Sunstroke, Precautions against.—To those exposed by their avocations to the action of high heat, a few words of advice as to the precautions by which the dangers of sunstroke may be lessened will not come amiss.

Temperance in living; the greatest moderation in the use of alcoholic beverages, or, better still, total abstinence; cleanliness; frequent bathing, and friction of the skin. Puddlers, furnace-men, persons who fire china-ware, expose themselves with impunity to a temperature far above that of the body in sunstroke for the reason that the skin acts freely. It is bathed in a proper perspiration, which evaporates with a rapidity proportionate to the surrounding heat, and in this way keeps the body at its normal temperature. With a dry, non-acting skin, these men would scorch. The clothing should be light and loose; thin flannel is the best underwear for the body. The head-covering must be light and wide, so as to protect the head and neck. The evaporation from a wet handkerchief, or the countryman's cabbage-leaf in the hat, keeps down the heat. Over-fatigue is to be shunned, and long hours of rest courted. The sleeping-place must be the coolest possible and well ventilated.

Sunstroke, Treatment of.—On the occurrence of the symptoms, pour cold water at once over the head. Apply ice or ice-water, in which is a little alcohol, all over the crown of the head and temples. Put the patient in the coolest place to be found; shut out the light; fan him constantly. Give an ounce of whisky in two of ice-water; raise the head slightly. Send for the doctor.

Superfluous Hairs (*Lat.* *superfluus*, running over; from *super*, above; *fluo*, I flow).—Plucking out hairs by the root does not destroy the hair papilla in the hair follicle from which the hair grows. Only the hair is removed, the papilla from which it re-grows remains. This explains the reason why so many of the methods for the removal of the superfluous hairs are generally useless or worse than useless. If they are pulled out with the tweezers, then there is a still greater stimulus given, and the hairs return yet more coarse and obtrusive. Shaving with the razor but removes the portions external to the skin, and at the same time stimulates greater growth. In using preparations sold for the purpose of removing superfluous hair great care should be taken; for most, if not all, of them contain ingredients which are harmful to the skin.

Superior Maxilla.—*See* JAWS.

Supper.—*See* TEA AND SUPPER.

Supply of Food, How Regulated.—*See* FOOD, SUPPLY OF, HOW REGULATED.

Suppression of Urine (*Lat.* *suppressus*, held back; from *sub*, under; *pressus*, pressed; from *premo*, I press).—This takes place when the kidneys do not secrete their proper amount of urine, and then the blood becomes poisoned, because those substances are contained in the blood which ought to be voided; there is thus an important difference between these cases and those of retention of urine, which we have already seen may arise from a stricture or from paralysis of the bladder, and which may be relieved by passing a catheter.

Suppression of Urine, Treatment of.—In cases of suppression the loins must be cupped, and a sharp purge given. It often comes on at the end of old-standing kidney disease, and hastens the termination of the illness.

Suppuration, Gargle to Promote.—*See* GARGLES.

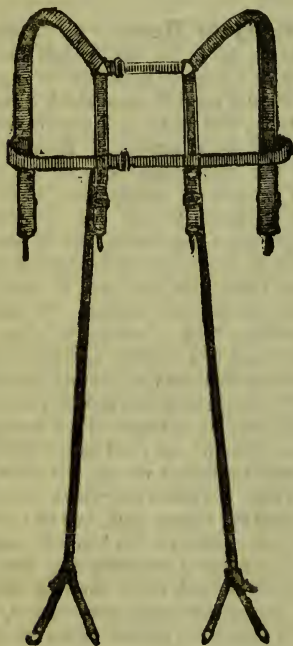
Surgeon, Physician and, Distinction between.—*See* PHYSICIAN AND SURGEON, DISTINCTION BETWEEN.

Surgeons, Duration of Life in.—*See* DURATION OF LIFE IN VARIOUS OCCUPATIONS.

Surgery at Home.—In the simple instruction given on the subject in this work it is sought to show how to manage those slighter surgical cases which occur in households, and which are usually treated by the "domestic surgeon." Besides this, it has also been sought to point out what should be done in emergencies, while the family attendant is sent for. This is a matter of great importance. In all cases of accident, how much of safety depends upon the first hasty steps that may be taken towards the relief of the sufferer. To staunch the bleeding from a wound, to place the drowned man in a suitable position, and to protect him from cold, to prevent the frost-bitten limb from being too suddenly warmed, to administer an antidote or an emetic to the poor creature who shall have wilfully or ignorantly swallowed poison, will often be to save life. To direct the wisest means of supporting the broken limb, and of conveying the poor sufferer to his home, to suggest the easiest mode of divesting such limb, or the dislocated joint, of its covering, will be to save the sufferer much torture, and, perhaps, by preventing further injury, to expedite the cure.

Susceptibility of Skin (*Fr.* *susceptible*; from *Lat.* *suscipio*, I take hold of under; from *sub*, under, and *capio*, I take).—"Although everywhere sensitive," says Mr. Lewes, "the skin is not everywhere equally susceptible to the same kind of impressions. The face is more sensitive than the hand to temperature; the sole of the foot is more sensitive than the back to tickling; the tips of the fingers are more sensi-

tive than the palm of the hand to pain, and less to tickling. In cold weather we see men beating their hands together or clapping their sides to stir a little warmth; but they never think of slapping their faces with this energy. The schoolboy has often to hold out his hand for a stroke with the cane which would be intolerable on the back of his hand."



SHOULDER BRACE, SKIRT, AND STOCKING SUSPENDERS.

Suspenders (*Lat.* *suspen'do*, I hang up; from *sub*, under; *pendo*, I hang).—These articles are far better for women's use in keeping up stockings than garters, whose tightness and pressure always tend to impede the circulation of the blood, and frequently produce varicose veins. A useful form of suspenders is shown in the above illustration, in which means are

provided for bracing and keeping back the shoulders, relieving the hips from too much pressure from the weight of the skirts, and for keeping up the stockings.

Sustaining Power of Alcoholic Liquors.—*See* ALCOHOLIC LIQUORS, SUSTAINING POWER OF.

Sustaining Power of Tobacco.—*See* TOBACCO, SUSTAINING POWER OF.

Suture (*Lat.* *sutura*, a seam).—The seam or joint connecting and uniting the bones of the skull, whose edges are ragged and serrated like the teeth of a saw, the teeth of the edges of the bones filling into and clasping one another in so close and intimate embrace, that it is difficult, if not impossible, to part them by force. To separate the bones of a skull without injury so as to exhibit the sutures perfectly, the cavity of the skull should be filled with dry peas, and as much water as the cavity will hold after the introduction of the peas. The peas will then absorb the water and swell, and in swelling they will, by the irresistible pressure exerted, accomplish that which no violence could bring about effectually.

Swallow, Narrow.—*See* NARROW SWALLOW.

Sweat Glands.—*See* SUDORIPAROUS GLANDS.

Sweat Glands, Secretion from.—*See* PHYSIOLOGY OF SKIN.

Sweating Powder.—*See* POWDERS.

Sweet Basil.—This is a labiate plant whose aromatic leaves are used either fresh or dried for seasoning food.

Sweet Spirit of Nitre.—*See* MEDICINES, HOME.

Sweetbread.—This is a name given to the thymus gland of the calf; the pancreas goes under the same name.

Sweetmeats.—These are very often coloured with poisonous matters, and are thus rendered doubly unwholesome. A few do no harm; but when taken in excess, they are apt to cause derangement of the stomach. Cadbury's chocolate, in its different forms, and butter-scotch, are the best for children.

Swelling of the Feet and Legs, and Varicose Veins in Pregnancy.—By the pressure of the enlarged womb upon the venous trunks, the free circulation of the blood in the veins of the lower extremities is hindered. This is frequently seen during the later months of pregnancy. The return of the blood being thus impeded, the veins of the legs enlarge and become varicose. This condition most frequently manifests itself in those who have borne many children. In consequence also of this mechanical pressure, the feet and ankles are occasionally found to swell. This usually occurs towards night, and generally disappears before morning.

When the enlargement of the veins of the legs is not very great, and when the vessels are not hard and lumpy, the administration of mild aperients, and the application of a calico bandage to the limb, will generally suffice. The bandage should extend from the foot, and must be applied with equal pressure over every part of the limb. When the veins are hard and lumpy, and present a knotty character, this treatment may be insufficient, and thus recourse must be had to the elastic stocking, and to occasional rest in the recumbent position.

Should the veins become painful and inflamed, the patient must at once resume the horizontal position, apply warm fomentations to the part, and send for medical advice. An occasional and very troublesome condition is met with in the form of an enlargement of the veins of the *external parts*. This affection is not confined to those who have already given birth to children, but may also be met with in those who are pregnant for the first time. They complain of a swelling at one or other side,

which goes on enlarging as pregnancy advances, and ultimately becomes very troublesome to them, interfering with progression, and in other ways giving rise to annoyance. When a woman suffers from this condition, she should take frequent rest in the recumbent position, and should wear an abdominal belt. Beyond this, little can be done, and the condition will pass away of its own accord as soon as labour is over, and the pressure which gave rise to it has been removed.

Care must be taken not to expose these varicose veins to the risk of external injury, as when ruptured they bleed most profusely, and the bleeding thus set up, unless checked, may cause the patient's death.

Swimming.—Every boy and girl should be taught to swim as early in life as possible. The importance of swimming was so highly estimated by the ancients, that the Greeks believed it as necessary a branch of education as reading itself, and an old Greek proverb, "he has learnt neither reading nor swimming," expresses ignorance, and is equivalent to our saying he can neither read nor write.

Swiss Wines.—See WINES OF COMMERCE.

Sydney Smith on Diet.—"The longer I live," says Sydney Smith, "the more I am convinced that the apothecary is of greater importance than Seneca, and that half the unhappiness in the world proceeds from little stoppages, from a small duct choked up, from food pressing in the wrong place, from a vexed duodenum or an agitated pylorus. The deception, as practised upon human creatures, is curious and entertaining. My friend sups late; he eats some strong soup. Then a lobster, then some tart, and he dilutes these esculent varieties with wine. The next day I call upon him; he is going to sell his house in London, and to retire into the country. He is alarmed for his eldest daughter's health. His expenses are hourly increasing, and nothing

but a timely retreat can save him from ruin. All this is lobster; and, when over-excited nature has had time to manage this testaceous incumbrance, the daughter recovers, the finances are in good order, and every rural idea is effectually excluded from the mind. In the same manner old friendships are destroyed by toasted cheese, and hard, salted meat has led to suicide. Unpleasant feelings of the body produce corresponding sensations in the mind, and a great sense of wretchedness is sketched out by a morsel of indigestible or misguided food."

Syllabub.—Syllabub is an agreeable preparation composed of three parts of new milk to one of white wine, sweetened with sugar. Whipped syllabub is the same, having cream instead of milk and the white of three eggs. It is properly used during the summer, and is both cooling and refreshing drink.

Sympathetic Ophthalmia.—*See* OPHTHALMIA, SYMPATHETIC.

Sympathy between Stomach and Brain.—*See* STOMACH AND BRAIN, SYMPATHY BETWEEN.

Symptomatic Fever.—*See* FEVER, CHARACTERISTICS OF.

Synovia or Joint Oil.—*See* BONES, CLASSIFICATION OF; BONES, LONG.

Syphilis.—Syphilis is an infectious disease, always acquired by means of a poison which has come from some other person affected with the same. It can never by any possibility develop anew of itself. Eruptions on the skin are frequently caused by syphilis, or venereal disease, although probably the real frequency of this dreadful disease is by no means indicated thereby, as many affected with it shun observation even of regular physicians.

The manifestations of constitutional syphilis are so varied and different in individual cases that no attempt can be made to open the subject clearly here, for only a perfect

knowledge of the disease and long training can render its recognition possible in every case. The lesions, or appearances, which it produces on the skin may stimulate almost every disease which affects that organ, and frequently the diagnosis will prove very difficult.

In regard to the treatment of syphilis, absolutely nothing can be said, for under no circumstances should the patient, even though he be a medical man, attempt to guide his own case. If well treated, and if the patient be able and willing to follow every necessary direction, there is comparatively little need for anxiety or distress in syphilitic patients; the more dreadful manifestations need not appear; these are seen mainly in hospitals among the poor and neglected, who have had too little food and too much alcohol and tobacco.

Syringing the Ear.—A few directions respecting this important manipulation may well be given here. The first injunction is *never use cold water* in the syringe. A short, hard rubber syringe, such as can be obtained at many of our chemists' shops, is about the best kind for general use. This should move easily, without jerks. An ordinary finger-bowl may be employed not only to hold the warm water, but to catch the current as it returns from the ear. The patient can easily hold this vessel against his cheek during the syringing, unless it be an infant, when a large towel under the ear will catch the return current from the syringe.

The syringer should take the auricle at its upper-back edge, between two fingers, and draw it gently upward and backward, so as thus to straighten the cartilaginous part of the auditory canal, and facilitate the entrance of the water. The nozzle of the syringe, held close to the ear, should then be directed backward and forward, so as to best convey the water to the depth of the canal of the ear.

A few drops of warm sweet oil will often cause any insect in the ear to crawl out; if not, it will smother it, and the creature will

float to the surface of the fluid, and can then be easily removed from the ear.

System, Eyes and, Connection between.—See EYES AND SYSTEM, CONNECTION BETWEEN.

T Bandage.—The ordinary roller-bandage is in the form of a long narrow strip, but bandages made in the shape of the letter T are often needed, and can be applied to various parts of the body where a straight strip is unsuitable.

Tailors.—See SEDENTARY OCCUPATIONS.

Tamarind.—The tamarind-tree is a native of both the Indies, and from thence is procured the preserved fruit known by the name of tamarinds. The pulp of tamarinds is an agreeable laxative acid substance of great use in both putrid and inflammatory disorders, for abating heat and thirst, and correcting putrefaction.



TAMARIND. (*Tamarindus Indica*.)

Tanks, Foul Air in.—See WELLS, TANKS, ETC., FOUL AIR IN.

Tannin Gargle.—See GARGLES.

Tapeworms.—The tapeworm is another parasite which not unfrequently

inhabits the stomach of man, and gives rise to serious, dangerous, or even fatal symptoms. It has a wonderful life-history, which we have not space here to recount, and after sundry transmigrations through the ox, pig, or sheep, enters our own bodies generally in consequence of our eating raw or underdone beef. According to Pappenheim, the change of cooked meat from its red to brown colour, which is due to an alteration in the blood-corpuscles by heat, takes place at a temperature of about 150° Fahrenheit, and below this degree there is no certainty that the eggs or young of the tapeworm, or of the trichina are killed. Tapeworm sometimes makes its way into our systems by way of salad, celery, cucumbers, or other green vegetables eaten uncooked and without thorough preliminary washing.

Tapioca.—This excellent farinaceous food is the produce of the pith of the cassava tree, and is made in the East Indies, and also in Brazil. It is procured as a starch from the tree by washing, then dried, either in the sun or on plates of hot iron, and afterwards broken into grains, in which form it is imported into this country. Its nutritive properties are large, and as a food for persons of delicate digestion, or for children, it is in great estimation. "No amylaceous substance," says Dr. Christison, "is so much relished by infants about the time of weaning, and in them it is less apt to become sour during digestion than any other farinaceous food, even arrowroot not excepted."

Tapioca, Boiled.—This may be prepared in the same way as sago, only, being more soluble in water, it just requires half the time for maceration and boiling. It should be sweetened and flavoured like sago.

Tapioca Pudding.—Make a pint of tapioca mucilage with milk, and beating up the yolks of two eggs with half an ounce of sugar, stir this into the mucilage.

Bake in a slow oven. Sago and arrowroot may be made into puddings of a similar kind and used instead. All these foods are very good as articles of diet during convalescence.

Tarragon (*Span. taragona; Arabic tarkhun; draco*, a dragon).—This plant is one of the *Compositæ*: its proper name is *Artemisia Dracunculus*. It bears a close relationship to the popular aromatic plants common wormwood and southernwood: unlike them, however, the leaves are undivided. It is cultivated in France to some extent for flavouring vinegar, and as an ingredient in salads and pickles.

Tartaric Acid (*Low. Lat. tertarum, tartar*).—In this we have the characteristic acid of grapes. It is a solid crystalline substance, which, like citric acid, is readily soluble in water. It is a less wholesome and pleasant acid than citric acid.

Tartar on Teeth.—See HYGIENE OF THE MOUTH.

Taste of Water.—See GOOD WATER, CHARACTERISTICS OF.

Taste, Sense of.—The sense of taste has a special apparatus, and only in this apparatus can the sensations known as those of taste be excited by savoury bodies. This apparatus is the tongue. Taste may be regarded as similar in kind to the sense of touch, but as more exalted in degree. Some amount of solubility in the substance placed in the mouth seems necessary to its development. Like other sensations, taste is liable to alteration and perversion in disordered states of the system.

Taste and smell act so constantly together that we not unfrequently confound them. Many substances which are considered eminently savourous are tasteless if the sense of smell be in abeyance—as when the nose is held, or at the early stage of a cold in the head. The *bouquet* of wines intensifies their flavour, and there is no more popular

way of taking a black draught than of holding the nose till all be swallowed.

Taste soon becomes blunted unless varied; as the sensation of colour becomes more and more indistinct the longer the eye dwells on it. In illustration of this there is a well-known experiment: a man's eyes are bandaged and he is made to drink alternately of port and sherry; at first he readily distinguishes the one wine from the other, but after a few sips it becomes impossible for him to say which is port and which is sherry. Whereas if he were allowed to eat a bit of biscuit, or to drink a little water from time to time, he could continue distinguishing each wine indefinitely.

Tea (*Fr. thé*, pronounced tay; *Chinese Tsha*).—Tea consists of the leaves of several varieties of a small shrub found in China and India. The leaves are gathered in the fourth year of the growth of the plant, which is generally dug up and renewed in its tenth or twelfth year. The leaves are cropped with care by gatherers, who wear gloves, wash frequently, and avoid eating things likely to affect the breath. The differences between teas result from the varieties of soil and growth, and also from the mode of curing and drying the leaves. Black tea consists of leaves slightly fermented, washed and twisted. Genuine green tea is made of exactly the same leaves, washed and twisted without fermentation; but commercial "green" teas are often black teas coloured with Prussian blue. Probably five hundred millions of persons, or half the human race, now use tea. In the United Kingdom above 32,000 tons, or 73,000,000 pounds, are annually used, or about two and two-thirds pounds for every person in the kingdom. The chief action of tea depends firstly on its volatile oil (less in old than in new tea), which is narcotic and intoxicating; and secondly, on a peculiar crystalline principle called *theine*. Theine excites the brain to increased activity; but soothes the vascular system by preventing rapid change or waste

in the fleshy parts of the body, and so economizes food. Four grains of theine, contained in half an ounce of tea, act in this way; but if one ounce of tea, containing eight grains of theine, be taken in a day by one person, then tremblings, irritation of temper, and wandering thoughts ensue. When the system is thus saturated with theine, it is useful to resort to cocoa as a substitute for a few days, when the symptoms subside, and the use of tea can be renewed; but it is unadvisable ever to take it in such quantities as to occasion such symptoms. Tea contains also a quantity of tannic acid, which, being an astringent, is useful as a gargle in sore throat, and as an injection in some cases. By chemical analysis one hundred parts of good tea contain—

Water	5·0
Theine	3·0
Casein or cheese	15·0
Aromatic oil	0·75
Gum	18·0
Fat	4·0
Sugar	3·0
Tannic acid	26·25
Fibre	20·0
Mineral matter	5·0

Or,—

Water	5·0
Flesh-formers	18·0
Heat-givers	72·0
Mineral matter	5·0

In an ordinary solution of tea the flesh-formers remain with the leaves, but may be taken up by soda in the water. Hence the practice of the poor of adding soda to the water, when making tea, extracts much of its nutritive properties.

The effects of tea hardly require description. It exhilarates without in any sensible degree intoxicating. The brain is excited by it, and increased activity and wakefulness is produced. Hence arises its usefulness to hard students, to all who burn the midnight oil, and labour much with the head. It soothes, on the other hand, and

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stills the vascular system, and thus we find it very serviceable in inflammatory diseases and as a cure for headache. When green tea is taken strong, it acts with considerable power on some constitutions, producing nervous trembling and other alarming symptoms, acting as a narcotic, and in the case of some of the inferior animals even occasioning paralysis. Its exciting effect upon the nerves makes it of considerable use in counteracting the effects of opium and of fermented liquors, and the stupor sometimes induced by fever.



TEA SHRUB. (*Thea Chinensis*.)

Tea is woman's great beverage, since, by its mildness and by its peculiar nature, it is the best of all adapted for her fine organization. It is used to excess by women more than any other of the stimulants, and much more than by men. It is her solace and her strength. It makes ordinary food more palatable, and aids in its digestion, and frequently supplies its place.

When the appetite is repelled through grief or disease, when the organs of assimilation have lost their vigour through long abstinence or repeated irregularities attendant on the cares of raising a family,

tea gratefully sustains the failing energies, and that too with the least possible tax on the organs of digestion.

The first use of tea dates from a mythical story. Darma, an Indian prince, visited China about the year of our Lord 510, on a mission of religion. In order to obtain greater influence over the people he devoted nights and days to prayer. After several years he fell asleep, overcome with fatigue. When he awoke he cut off his eyelids and threw them on the ground, that he might the better remember to preserve his vow of vigilance. The following day he returned to the spot and found that the eyelids had become a shrub before unknown. Some of the leaves of this he eat, and they quickened his spirits and restored his vigour. He recommended the plant to his disciples, and it became popular.

Tea, Adulteration of.—Tea is not unfrequently adulterated with the leaves of other plants, and with those of the true tea shrub which have been dried after most of their virtues have been extracted by infusion in water. Black tea is sometimes coloured with blacklead, which, as it contains no lead, and consists almost entirely of pure carbon or charcoal, is quite harmless. Green tea, however, often owes its glaze or bloom to a mixture of Prussian blue, indigo, or China clay, which, if not poisonous, is at least indigestible, and quite inappropriate as an article of food.

Tea and Supper.—Late diners do not require tea or supper. Those who take the principal meal at an early hour should eat another meal before the day is over. A cup or two of tea, with some substantial food, as an omelette, chops, or a cut of cold meat, will constitute a sufficiently solid repast for the last of the three, which is the full number of meals required by the vigorous and healthy. Whatever luxury, such as an ice or other confection, people are disposed to indulge in, had better be taken immediately after dinner than an hour or so later; for, when diges-

tion has once begun, it is not safe to interrupt its operation by any fresh call upon the exertion of its powers.

Tea, How to Make.—In making tea or coffee, two points are to be particularly regarded. The water, in the first place, must be always on the boil at the very moment it is brought in contact either with tea or coffee. This is only to be secured by first heating the vessels in which the infusion is to be made. If the hottest water is poured into a cold pot, its temperature will at once be reduced below the boiling point, and it will no longer have the power of fully extracting the qualities of the tea or coffee. Secondly, to have the full flavour, it is necessary to drink the infusion as soon as made, for if it is allowed to stand, the aroma, which is very delicate and fugitive, will escape. By infusing tea and coffee too long, moreover, the bitter and astringent principles which they contain are extracted, and the beverage becomes disagreeable to the taste and unfavourable to health, often producing constipation and other dyspeptic symptoms.

Tears, Cause of.—With regard to the tears which proceed from moral instead of physical causes, the explanation to be given of them is a very prosaic and material one. Tears are caused both by the sudden and rapid flow of blood to the head and by excessive nervous excitement. They are most frequent with women and children, whose nervous organization is less strong than that of men. Amongst men, it is those of sanguine or nervous temperaments who weep most often. Lymphatic natures, on the contrary, and people of bilious temperament, rarely weep at all; the former because they have commonly but little sensibility, and the latter because they have usually a firm control over their feelings.

Tears, Composition of.—The principal element, the prime ingredient, so to say, of a tear, is water; this water, upon dissolution, contains a few hundredth

parts of the substance called mucus, and a small portion of salt, of soda, of phosphate of lime, and of phosphate of soda. It is the salt and the soda that give to tears that peculiar savour which earned for tears the epithet of "salt" at the hand of Greek poets, and that of "bitter" at that of ours: "salt" is, however, the more correct term of the two. When a tear dries, the water evaporates, and leaves behind it a deposit of the saline ingredients; these amalgamate, and, as seen through the microscope, array themselves in long crossed lines, which look like diminutive fish-bones.

Tears of Young Children.—Darwin in his "Expression of the Emotions in Man and Animals" says:—"Infants whilst young do not shed tears or weep, as is well known to nurses and medical men. This circumstance is not exclusively due to the lachrymal glands being as yet incapable of secreting tears. I first noticed this fact from having accidentally brushed with the cuff of my coat the open eye of one of my infants, when 77 days old, causing this eye to water freely; and though the child screamed violently, the other eye remained dry, or was only slightly suffused with tears. A similar slight effusion occurred ten days previously in both eyes during a screaming fit. The tears did not run over the eyelids and roll down the cheeks of this child whilst screaming badly when 122 days old. This first happened 17 days later, at the age of 139 days. A few other children have been observed for me, and the period of free weeping appears to be very variable. In one case, the eyes became slightly suffused at the age of only 20 days; in another at 62 days. With two other children, the tears did *not* run down the face at the ages of 84 and 110 days, but in a third child they did run down at the age of 104 days. In one instance, as I was positively assured, tears ran down at the unusually early age of 42 days. It would appear as if the lachrymal glands required some practice in the individual before they are easily excited

into action, in somewhat the same manner as various inherited consensual movements and tastes require some exercise before they are fixed and perfected.

Tears, Secretion of.—See LACHRYMAL GLAND.

Tears, Utility of.—The utility of tears to animals in general, and in particular to those which are exposed much to the dust, such as birds who live amidst the winds, is easy to understand; for the eye would soon be dirtied and blocked up, like an uncleaned window-pane, had not nature provided this friendly ever-flowing stream to wash and refresh it. A very little fluid is necessary to keep the eye always clear and clean; but here again we must admire the wonderful mechanism which works the human body, for it is to be observed that when, through some accident or hurt, the eyeball has need of more water than usual to cleanse it, nature at once turns on a more abundant supply of tears. Thus, for instance, when a grain of dust or an insect creeps into the eye, the eyelids at once fill and run over with tears, and these not only alleviate the pain, but also, when the object is small enough, carry it away down the two small conduits already noticed. The same thing occurs when either smoke, too vivid light, or too intense cold obscures the sight—tears at once come to our relief, and protect the eyes from harm.

Teeth, The.—The teeth in man are hard, bone-like structures implanted in sockets along the jaws, and are intended to fulfil various useful purposes. Two sets of teeth are developed in the human mouth—the first called the deciduous, temporary, or milk teeth; the second, the permanent set.

Teeth, Artificial.—When the natural teeth have been lost, the deficiency should be supplied by substitutes, and the personal appearance of the individual will be promoted thereby, provided that the

substitution is skilfully and artistically performed. Those who have parted with some of their teeth are inclined to set a higher value on those which remain; and supplying the place of the missing ones is often the best means of preserving the rest—preventing their elongation and irregularity. When the molars and bicuspsids have been removed, the front teeth are apt to project, presenting an unsightly appearance. This may, to a great extent, be prevented by supplying artificial masticating surfaces.

There are various bases for artificial dentures—gold, platinum, porcelain, silver, rubber, celluloid, etc. Which of these materials is the best in a given case depends upon a variety of circumstances—the extent and character of the loss to be supplied, the age and physical characteristics of the patient, the condition of the mouth, the special qualifications of the dentist, and the length of the patient's purse. No one of the bases named is always the best; each of them has peculiar fitness for special cases. No authoritative opinion governing all cases can, therefore, be given. As a general rule, however, it may be affirmed that a gold base has more advantages and fewer disadvantages, certainly for partial sets, than any other material.

The most important office of artificial teeth, as well as of natural ones, is the mastication of food. The proper performance of this function is indeed essential, and frequently the skill of the dentist is rewarded by a restoration to health of those whose imperfect mastication previous to the insertion of artificial teeth had entailed upon them all the evils of indigestion.

The sense of fatigue in the jaws and muscles of the face, caused by inability to close the mouth properly, in the absence of opposing or occluding teeth, is also overcome by the skilful substitution of artificial teeth. The enunciation is likewise improved, in many cases being made as perfect as before.

Sometimes in the case of elderly people who have lost their teeth, there is a modifi-

cation of the lower jaw, which causes it to interfere with the auditory apparatus in such a manner as to produce partial or absolute deafness, which the insertion of a properly constructed denture promptly relieves. Another advantage gained by the wearing of artificial teeth is that they act as a dam in preventing the sudden emptying of the mouth in speaking.

The modification of the features, caused by the removal of the supports of the lips and cheeks, is, of course, changed by the insertion of artificial teeth; but whether the change is an improvement, or otherwise, depends upon the artistic perceptions of the dentist.

But important as are the æsthetics of substitution, use and comfort are mainly to be considered. An artificial denture must be properly constructed and skilfully adapted, or it will be worse than useless. Badly fitting plates cause serious affections not only of the soft tissues of the mouth, but frequently of the hard palate and of the jaws. However correct artificial teeth may be in their æsthetic relations—however comfortable and useful—let no one be beguiled into a willing sacrifice of the natural teeth for the sake of the greater comeliness of substitutes, or because the latter cannot ache. The best set of artificial teeth that ever was made is so far inferior to an average natural denture that the two can only be contrasted, not compared.

Teeth, Decay of the.—Decay of the teeth, or caries, is an affection which is almost universal. It may be defined as a disintegration of the tooth structure, affecting the enamel, the dentine, and sometimes, though rarely, the cementine. It always commences on the exterior of the tooth, and is chiefly dependent upon external influences, though it may be modified by constitutional conditions.

The causes of decay are predisposing and exciting. The predisposing causes are imperfect structure, irregularity of position, and mechanical injuries. Conditions inherent in the teeth by virtue of their

original structure, determined before birth, or during infancy, establish in many cases a predisposition to decay.

Irregularities of position, from whatever cause, render the teeth liable to decay. Mechanical injuries—falls, blows, and improper use of the teeth, destroying the continuity of the enamel—also predispose to decay.

The exciting causes of decay are chiefly different forms of chemical action, which may either follow from the use of acids as food or medicine, or be caused by improper tooth-powders or washes; or may result from a vitiation of the secretions of the mouth, either from a general systemic derangement, or from a local cause, such as mumps, sore throat, or the presence of tartar about the necks of the teeth, causing an irritation of the gums and inducing an acid secretion; or from the fermentation or decomposition of food between the teeth. The latter is beyond question the chief cause of caries.

Decay never begins on the smooth surfaces of teeth—those which are exposed to the friction of mastication—but always commences at points which, owing to their structure or to their arrangement, furnish convenient receptacles for decay-producing agents.

The character of the disintegration to which the teeth are liable differs, as does their original formation, in different individuals, the decay being dark, white, dry, moist, horny, soft, chalky, or cartilaginous, according to the quality of the original structures and the strength and activity of the solvent; also somewhat according to the systemic conditions of the individual. The teeth are a part, and an exquisitely organized part, of the animal economy. They must therefore be more or less influenced by the state of the general health. They are liable to considerable modification of their texture by varying constitutional conditions, becoming softer at times, and therefore more liable to be injuriously affected by decay-producing agents. Moreover, morbid secretions of the mouth in

deranged systemic conditions tend markedly to the production of caries. Slight irritation of the mucous membrane, such as is caused by the presence of tartar which has insinuated itself between the gums and the necks of the teeth, will provoke a mucous secretion decidedly acid and as decidedly destructive to tooth-structure.

Derangements of the alimentary canal are generally accompanied by acidity of the saliva. During pregnancy, the saliva is generally acid in character, which fact, in addition to the softened condition of the teeth themselves previously alluded to, accounts for the rapid decay which undoubtedly is apt to take place at such times. In all acute inflammatory diseases, and in all chronic affections of the digestive tract, there is increased viscosity of the mucous secretions of the mouth, with a marked diminution of the saliva, tending to the production of caries. In dyspeptic troubles there is generally an acid condition of the digestive fluids which are regurgitated from the stomach to the mouth, and act directly upon the lime of the teeth.

In addition to the acids, resulting from derangements of the stomach and alimentary tract, or from the mucous and salivary glands, or from the fermentation or decomposition of food about the teeth, there is another agent which is supposed to play an important part in the extension of caries, viz., a vegetable parasite—a fungus—found in the interstices, furrows, and depressions of neglected teeth, but most abundantly in cavities of decay. It is not claimed that this fungus originates decay, but that it becomes an active agent in the destructive process when once a loss of substance has been caused in the enamel—its filaments penetrating the minute chinks, excavations, and orifices caused by disintegration, and opening the way for the entrance of chemically destructive agents. The development of this fungus seems to be favoured by an acid condition of the mouth. Treatment, therefore, which corrects the acidity lessens the danger. Antacid washes, especially washes or powders containing soap, hinder

the development of the parasitic vegetation.

Whatever may be said of the deleterious effects of tobacco upon the general system, it has not been proved to have any influence in the production of caries, although the discoloration which results from its continued use detracts markedly from the appearance of the teeth. In this connection it may be mentioned that the use of a clay pipe produces a rapid abrasion of the teeth, between which it is held, and that short pipes are charged with the development of cancerous affections of the tongue and lips.

Sugar and confections exercise no directly injurious effects upon the teeth, but when taken in excess do produce an acid condition of the stomach unfavourable to the health of the mouth, and when left in the interstices of the teeth rapidly undergo an acid formation, resulting in a product capable of acting very injuriously upon tooth-structure. Particles of candy remaining between the teeth, will in a single night produce demonstrable mischief.

The progress of decay of the teeth is as varied in different individuals and at different times as is the character of disintegration. It proceeds sometimes insidiously and slowly, and again with wonderful rapidity, sometimes announcing its ravages by a sensitiveness of the exposed dentine to sweets and acids, and to changes of temperature, and at other times giving no notice of its presence until a complete exposure of the pulp has been made.

Teeth, Decay of, a Sign of Old Age.—One of the first signs of wearing out is the decay or falling out of the teeth, which loss leads to serious derangements of digestion, as a consequence of the necessarily imperfect mastication or chewing of food. The complete breaking-up of our more solid articles of diet, and their thorough mixture with saliva, are indispensable preliminaries to their solution in the stomach and intestines, upon which our vigour largely depends. Hence, it is well worth while for

us to avail ourselves to the utmost of the skill and ingenuity displayed to such an eminent degree by practitioners of the dental specialty in medicine, which generally enable them to prolong for several years the usefulness of decayed teeth, and finally to substitute for them artificial molars and incisors which perform their vicarious office with wonderful success.

When, as sometimes happens, the dentist's art fails to serve the required purpose, care must be taken to have all kinds of solid food cut or ground into very small pieces before it passes the lips. After it enters the mouth, articles of diet (whether solid, and thus artificially prepared; soft, like boiled rice or milk toast, or liquid, such as soups or meat extracts) should not be swallowed immediately, but ought to be mixed with saliva by moving them round in the mouth for a short time, about as long as they would require for mastication if the teeth were in perfect order.

Teeth, Deciduous.—See DECIDUOUS TEETH.

Teeth, Extraction of.—It should be remembered that a tooth which has ached once will be likely to ache again, and an endeavour should be made to prevent a second attack in the same tooth by securing professional advice.

It is seldom that the extraction of a tooth becomes a necessity. Thousands of teeth are sacrificed through impatience, the result of the pain which ought to have been avoided by timely attention, and which might have been alleviated and the teeth preserved.

The facility afforded for the painless extraction of teeth by the use of nitrous oxide gas, leads to the needless, wanton, wicked sacrifice of useful organs—to losses which can never be made good. The willingness of many persons to part with valuable teeth rather than take a little trouble and incur a small expense for their preservation, is an evidence of ignorance and of a readiness to submit to mutilation of the mouth as remarkable as general.

There is urgent need of a popular awakening to the fact that wilful neglect of the health of any portion of the body is criminal; that such neglect differs only in degree from suicide. The preservation of the integrity of the physical organism and of the vital forces, and the restoration of diseased or wounded members, whenever possible, may be said to be the leading principle alike of surgery, of medicine, and of dentistry. It should be the ambition of every individual to retain as long as possible each organ and faculty of body and of mind. But when it becomes desirable as a choice of evils to sacrifice a tooth, it is a weakness and a folly to allow it to remain through dread of the brief pain accompanying extraction. If its room is better than its company, and its displacement is demanded for conservative reasons, the sooner it is removed the better, both for the health of its neighbours and for the comfort of its owner.

Teeth, Inferences Drawn from the.—See INFERENCES DRAWN FROM THE TEETH.

Teeth, Irregularities of the.—The value of the teeth, not only for ornamentation and vocalization, but also for utility in mastication, depends very much upon their regular position in the arches of the jaws, and upon their perfect occlusion. In a faultless denture, the upper and lower teeth come together in such a manner that the elevations and depressions upon the opposing surfaces fit into each other so as to produce the most effective results in mastication. When from any cause this perfect occlusion is prevented, their usefulness is more or less impaired. The irregularity may be limited to a false position of one or more teeth, or may involve the entire denture; may be the result of some extrinsic cause, or of an incongruity of size between the teeth and the jaws. A single tooth is sometimes twisted upon its axis, overlaps the adjoining tooth, or erupts inside or outside of the arch. The latter occurrence—a frequent one with the canines—is generally

a source of great annoyance, interfering seriously with the symmetry of the face. Sometimes the upper front teeth shut edge to edge against the lower, instead of overlapping them, causing a rapid wearing away of the edges of both. In other instances the upper teeth shut so far outside of the lower ones that they rest upon the lower lip; or they protrude so that the upper lip fails to cover them. Another variety of irregularity is that in which the teeth of the lower jaw close in front of the upper teeth—an inversion of order which in the dog is known by the name of “underhung.” Another, but rarer form of irregularity is that in which the molars alone come in contact when the mouth is closed, causing the front teeth to stand apart.

Teeth, Irregularities of the, Causes of the.—Irregularities of the teeth proceed from a variety of causes, among which may be mentioned mechanical injuries, such as blows on the mouth; the pressure of supernumerary or extra teeth; a steady pressure such as is kept up during the habit of sucking the thumb, tongue, or lip during childhood; a too early extraction of some of the temporary teeth, especially of the molars and canines; a wrong direction given to one or more teeth by a mechanical impediment, such as the retention in the mouth of temporary teeth, or even roots of temporary teeth, after the times when they should be removed; hereditary transmission of dental peculiarities; the incongruous association of large with small jaws—a mixing without blending of differing parental characteristics—and so on.

Children with enlarged tonsils are liable to an irregular disposition of the teeth as a result of the habitually open mouth, caused by the difficulty of breathing through the nose.

The illustration on the next page shows the type of deformity resulting from the habit of thumb-sucking. A similar protrusion of the teeth of the lower jaw is produced by the habit of sucking the first and second fingers, the weight of the hand and

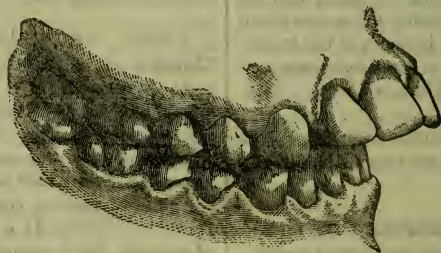
arm gradually forcing the teeth out of position.

In many instances children are allowed to retain the bottle from which they are nursed, or are supplied with a sugar-teat, or are permitted to suck the thumb or fingers, because of the quieting effect which this occupation seems to produce. The resulting deformity of the jaws, and the consequent irregularity of the teeth (crowding, overlapping, or protruding), produces disfigurement, and causes disabilities and discomforts which remain through life.

It is much easier to prevent these habits, or to break them up in their incipency, than after they have been fully formed, although in some cases the sucking instincts of the

sary to the correction of an irregularity, an easy adjustment is permitted in childhood, which a few years later would be tedious, difficult, and uncertain. One of the reasons for interference at an early period, when a tendency to irregularity is to be combated, is because of the fact that false positions of the teeth are made difficult of correction when those of the opposite jaw in closing prevent them from assuming their correct relation to the arch of the jaw.

The causes and forms of irregularity are so numerous and various that no rules can be laid down for treatment. The natural expansion of the jaw up to a certain period, the extent of the irregularity, the character and condition of the teeth, the age of the



EXAMPLE OF IRREGULAR DENTITION CAUSED BY SUCKING THUMB OR FINGER.

child make their prevention or early correction no easy task to the anxious parent.

Chief in importance in the list of causes of irregularity is defective growth of the jaws during the development of the permanent teeth. In a perfectly healthy person, the teeth and the jaw would develop harmoniously; but it is quite possible for one or the other, or both, to suffer in development, according to the character of the destroying influence.

It is much easier to avoid decided irregularities of the teeth by attention at the proper time than to correct them at a later period. The nutritive functions are more vigorous and the processes of absorption and reconstruction more active in early life than subsequently. If, therefore, changes of position of one or more teeth are neces-

sary, and various other considerations, will determine the judgment of the dentist. Under the care of a competent adviser, the prevention or correction of most forms of irregularity is neither difficult nor problematical, if the proper effort be made in time.

Teeth, Nervous Relations of the.—General systemic disturbances, resulting from diseased dental organs, might be considered as impossible, were it not for the instances with which every dental practitioner is familiar, in which debility, sleeplessness, nervous derangements, mental depression, palpitation, etc., after resisting constitutional medication, have yielded promptly to such treatment as was found necessary to restore a healthy condition of the mouth. So many and so varied are the

disturbances radiated or reflected to other organs, or dependent upon constitutional irritation from dental affections, that their enumeration in detail would be tedious; but the inharmonies thus set up may range from the mere sense of discomfort up to, and include, the gravest and most formidable derangements, involving even life itself.

But the sympathetic or reflex disturbances of harmony caused by dental irritation are not more interesting or instructive than are the converse manifestations of pain or discomfort experienced in the teeth, but originating elsewhere. A curious and familiar illustration, which will help to an understanding of these, is found in the effect produced on many, if not most, people through an irritation of the auditory nerves by discordant or peculiar sounds, such as those produced by the sharpening of a saw, the cutting of cork, etc., which not only "set the teeth on edge," but send a thrill through the system which is described as "making the blood run cold." Similar effects are produced on impressible organizations by the contact of the hand or fingers with certain substances. Many persons have their teeth set on edge and their blood made to run cold by touching velvet. Even those who have lost all their natural teeth and wear artificial substitutes assert that discordant sounds, as well as the taste, even the smell, or sometimes merely the mention of some fruits or drinks, will cause their teeth to feel "on edge" just as those who have lost a limb by amputation complain that they still suffer at times from itching, pain, or uncomfortable sensations in the missing member.

Many of the instances of painful affections of the fifth nerve are well-marked examples of reflected sensations, the primary irritation being in the stomach or intestinal canal. The pain over the eyes so commonly associated with derangement of digestion, and which may frequently at once be relieved by correcting the acidity of the stomach, is a familiar instance. The condition properly known as "biliousness," among numerous other manifestations, not seldom reveals

itself to the suffering observer by a peculiar discomfort produced in the talk, which, variously described, may be summed up under the general phrase, "exalted sensibility."

An attack of dyspepsia is by many more quickly recognised through disagreeable sensations in the teeth than by any special stomach disturbance. In sea-sickness and in sick-headache the nausea is sometimes preceded by intense neuralgia in the teeth and jaws, promptly disappearing if vomiting be induced. In some people hunger will excite markedly disagreeable sensations in the teeth.

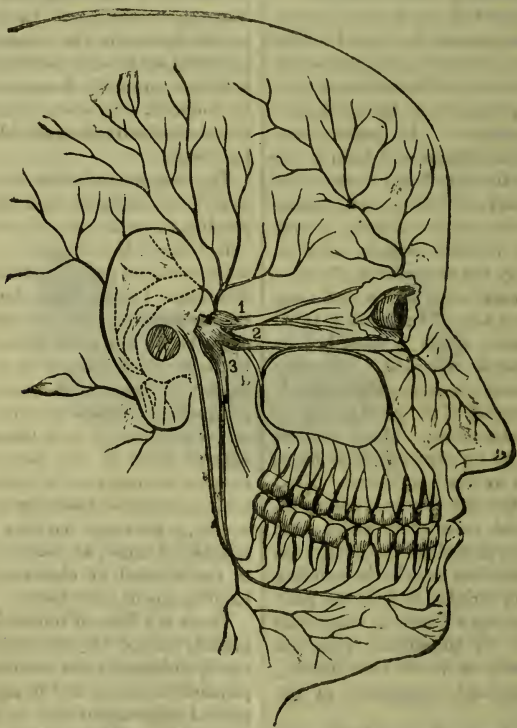
The singular affection known as "brow ache," or malarial neuralgia—which by yielding to quinine reveals its malarial origin—is frequently alternated, or is associated with periodical pain in perfectly sound teeth. Neuralgia (nerve pain) furnishes various illustrations of reflex or radiated pain, the cause being in a nerve centre in the brain, in the trunk of a nerve or in its extremity, or, by exchange of communication, in the sympathetic nervous system. Thus, a neuralgia originating in a diseased tooth may express itself in the face, scalp, eyes, or ears, or in more remote parts; while by the same method of radiation or reflection, reversed, a neuralgia having a general or constitutional cause, as malaria, or local cause in the stomach or elsewhere, may manifest itself in one or more teeth.

There is a form of toothache, not inappropriately termed "hysteric toothache," which seems to depend upon emotional rather than physical excitants, and is more amenable to mental impressions than to local or general medication. Rheumatism sometimes produces agonizing pain in the jaws, and either by direct influence, by the sympathy of contiguity, or by radiation, may so powerfully affect an individual tooth that the patient can hardly be persuaded that instant and complete relief would not follow its extraction. It is apparent, therefore, that many severe, remote, and reflex derangements may be associated with and dependent upon affections of the teeth. It is a sad mistake

for either the dentist, the physician, or the patient to consider the teeth as mere mechanical organs requiring only mechanical treatment, and to, therefore, ignore their nervous relations to the entire organism.

There are twelve pairs of nerves origi-

nerve of the muscles of mastication. It is called the "trifacial" because it is divided into three main branches, known as the "ophthalmic," the "superior maxillary," and the "inferior maxillary." These main divisions again sub-divide and give off



FIFTH OR "TRIFACIAL" NERVE. 1. OPHTHALMIC BRANCH. 2. SUPERIOR MAXILLARY BRANCH.
3. INFERIOR MAXILLARY BRANCH.

nating in the brain, and thirty-one in the spine. The fifth nerve, having its origin in the brain and represented in the accompanying figure, is the largest of the cranial nerves. Its functions are various. It is the great sensitive nerve of the head and face, the nerve of the special sense of taste, the nutrient nerve of the teeth, and the motor

branches to the eye and eyelids, the nose, the ears, the forehead, the scalp, the upper and lower lips, the chin, the gums, the tongue, and the teeth of the upper and lower jaws; filaments of the maxillary branches again join the ophthalmic branch and the seventh nerve—the nerve to the muscles of the face.

The fifth nerve is very remarkable on account of its frequent communication with the sympathetic nervous system, as well as its numerous ganglia, and its varied functions. It is this nerve which is specially affected during the eruption of the teeth, whether of the primary or permanent set. It is the irritation of this nerve during dentition which causes convulsions in children. It is this nerve which is the seat of facial neuralgia. It is the relation which this nerve bears to the head and face which is the cause of the various "sympathetic" affections of the eye, ear, etc., etc., so commonly associated with dental disorders.

Teeth, Permanent.—See PERMANENT TEETH.

Teeth, Physiognomy of the.—

The teeth are prominent actors in the human countenance: in some retreating so coyly behind the curtain of the lips, in others dancing forth brightly the moment it rises. Man differs from the animal in displaying his teeth, and may do so, since those which he principally shows are placed there to assist more in speech than in mastication. That they must be sound and white, and all in their places, it is superfluous to say; but it is not the most regular that we admire—or we admire them as we do a row of soldiers in perfect drill, and grow as tired of one as of the other. Slight irregularities give expression to the teeth. There are some which stand so honestly open, or fold so kindly over, that they seem to assist the general meaning, and therefore beauty, of the face, to which they serve as an occasional foreground, more than those formal faultless platoons, which have the further objection of never being out of sight. The gums, also, have a tender speech, and in their propinquity to the teeth give us beautiful contrasts of colour and substance; but they are troublesome members if they gain too much liberty, and occasionally throw over the countenance an air of indescribable undress which nothing redeems.

Teeth, Reparative Treatment

of.—The first effort in the treatment of caries should be directed to the predisposing and exciting causes, constitutional and local. The object of treatment is the arrest of the destructive action, and the repair of the damage in the manner best calculated to preserve the tooth or teeth in a serviceable condition, and to protect them against a recurrence of the decay. It is, of course, desirable that the treatment be begun as soon as possible after the attack occurs, and before any considerable progress in the disintegration of the tooth structure has been made. Very often a small orifice leads to an unexpectedly large interior cavity, and when the dentist is consulted, the preservation of the tooth is almost or quite impossible. Sometimes a tendency to disintegration is manifested in all the teeth, showing systemic derangement; sometimes it is limited to a pair of teeth, showing that constitutional conditions at the time of their formation have resulted in an imperfect texture, and, consequently, in a lessened capability of resisting the action of destructive agents; sometimes it is confined to a single tooth, in which case the explanation is probably to be found in its relations to the adjoining teeth.

When, owing to the character and progress of decay, and its appearance about the same time in teeth formed at different periods, there is reason to believe that it is an expression of constitutional disturbance, such systematic treatment should be adopted as will promote a healthy condition of the secretions of the mouth, and of the soft tissues about the teeth. All deposits and accumulations of whatever character about the teeth should be carefully and thoroughly removed, and such local correctives employed as may be indicated, conjoined with the utmost care as to constant cleanliness. Any mere mechanical treatment of carious teeth which ignores their original organization, their special condition and the temperament, age, and constitutional condition of the patient, is not likely to be successful. These are considerations

which must always enter into the calculation in reference to methods of treatment. There is no greater folly than to demand the following of stated formulæ, prescribed manipulations, and an unvarying routine for every operation, without regard to varieties of structure and character of decay. Whether to fill or file, with what and how much, must be determined by the dentist, chiefly by the peculiarities of each case. Until the influence of such considerations is better understood by the community, unjust prejudices and conclusions will prevail. The relative cost of different materials and methods must also be considered, though the most costly operations are by no means always the best, so far as the salvation of the teeth is concerned.

Gold is generally considered the best material for permanent fillings—those intended to be lasting; though in many cases it is admitted that other materials are to be preferred. There are, however, many preparations of gold, having distinct and different qualities, and many methods of manipulating them; so that there are more differences even in gold fillings than would be conceived by those not familiar with the subject. Amalgam, gutta-percha, and various other plastic fillings, have undoubted claims to consideration in many cases. The same is true of tinfoil. But patients are not ordinarily qualified to judge of the relative merits of the various materials and methods, nor of their special applicability in individual cases, and cannot do otherwise than to select an earnest, conscientious, intelligent dentist, and submit to his judgment—very certain to be better than their own—and having done so, to give him all the help in their power to secure the good results desired by both.

Good operations, of any and all classes, fail often because of a want of cleanliness on the part of the patient. If the teeth decay because of unhealthy conditions of the mouth, produced either by constitutional causes or from want of cleanliness, a continuance of the same influences will produce like results after the most thorough and most conservative treatment according

to any system. A tooth that has been filled, or filed, is not therefore to be supposed invulnerable to the attacks of destructive agents, and the dentist should not be held responsible for the patient's neglect. As a sick man requires more care than a well one, so a damaged tooth, even though repaired, needs more attention than a sound one.

Teeth, Temporary.—See DECIDUOUS TEETH.

Teeth, Temporary Removal of.—It is a mistake to suppose that the temporary teeth may be extracted at any time without injury. The domestic dentistry which watches for the first evidence of their loosening, in order that they may be promptly removed, is generally a mischievous interference. Another mistaken notion is that the temporary teeth were intended to be lost by decay, and in this manner to make room for their successors. Under favourable conditions they ought not to decay at all; but after they have fulfilled their missions, they should drop out as white and clean as when they first appeared.

If allowed to decay, the air pulps become exposed, giving rise to pain, leading generally to extraction of the teeth; or if the pulp die because of the exposure, gumboils form and interfere with mastication. Moreover, when the pulp of a temporary tooth dies, absorption of the roots is arrested and the tooth remains to cause soreness, inflammation, and suppuration, sometimes to be a mechanical obstacle to the advance of the succeeding tooth, which, as a result, may assume a position inside or outside, instead of in the line of the arch.

Though the premature loss of the temporary teeth is, as a rule, to be deplored, there are cases in which the extraction of one or more of them at the opportune time will save much trouble in securing a regular alignment of the permanent set.

The exemption of children from the suffering caused by dental decay, and the immunity of the parent from the consequent

inconvenience will be best secured by constant attention to the teeth from their first appearance. The general health of the child will also be promoted by keeping them in such a condition that mastication can be performed without pain: otherwise the child will soon learn to avoid that which is troublesome or painful, and by swallowing its food without proper mastication will bring upon itself all the evils of indigestion.

In infancy the mother should make it a part of her daily care of the child to secure perfect cleanliness of its teeth. Becoming then accustomed to it, the child, when old enough to rinse the mouth properly or to use the brush, will find it impossible to feel comfortable after a meal until the teeth have been cleansed; the habit thus early formed is almost sure to be continued through life. Small, soft tooth-brushes and pleasant dentifrices are now manufactured exactly suitable for children's use. In cases where, in spite of all the care given them, the temporary teeth show signs of decay, equal or even greater care than would be given to the permanent teeth under similar conditions should be taken to prevent its extension, and cavities of decay, particularly in the molars, should be filled with some one of the various preparations now in the hands of the dental profession. A good rule is to have a dentist examine the mouth of the child, after it is two and a half years old, at least twice a year or oftener if necessary.

Teething.—The period of teething is one which is looked upon by many mothers with dread. Owing to the greater irritability of the system usually found to exist at this time, there are diseases which are more liable to attack the child; and in order that everything may be done on the mother's part to guard against these, it will be well that she be made familiar with the usual time of appearance of the teeth, and with a few hints that may be of service in maintaining the health of the child during this period. For these hints, see the remarks on the **TEETH AND TEETHING, DIFFICULT.**

Teething or Dentition, Difficult (*Lat. dens, dentis, a tooth*).—It is a well-known fact that the period of dentition is the time of greatest mortality among children. It is true that during the same period other and more important changes are taking place in the organization of the child, especially in the stomach and intestinal tract, which are intended to prepare them to receive and digest solid food—changes which may be said to be concordant with the development of the masticatory apparatus. Doubtless these concurrent changes exercise their full share in producing constitutional disturbances at this epoch. This, however, makes it only more imperative that the child should have even more than usual hygienic care and freedom from all avoidable disturbing influences; for whatever tends, by modifying the general health unfavourably, to lower the resisting power of the organism, may readily convert the natural and otherwise easy course of dentition into one of pain and danger.

There is certainly during the period of dentition an increased susceptibility to nervous and digestive troubles, requiring more than ordinary watchfulness of the child on the part of the mother. Causes which at other times have no appreciable effect may then be fraught with danger. An exposure to cold, an attack of indigestion—anything which introduces inharmony into the functions of the animal life—may result in a disturbance of the process of digestion.

Difficult dentition may, therefore, be charged with causing or aggravating various disorders; as these, on the other hand, may be reasonably suspected of interfering with the natural eruption of the teeth. It is certainly unsafe to ignore the complications possibly due to dentition, if any derangement of the health of the child occur during the period when the teeth are erupting.

As a rule, the amount of irritation holds a relation to the number of teeth advancing simultaneously; but owing to the varying susceptibility of individuals, a single tooth

may cause more disturbance in one case than half a dozen will in another.

At the commencement of the eruption of the teeth there is generally an increased flow of saliva which keeps the mouth moist and cool. When the irritation increases, and the mouth becomes hot and dry, other derangements are likely to follow: the child becomes feverish; constipation or diarrhoea ensues—the latter, if not too severe or too protracted, being beneficial, however, rather than hurtful, but requiring, nevertheless, great care that it does not itself become a source of danger. An unusual redness of one or both cheeks, sometimes changing from one to the other, is a frequent symptom of nervous disturbance. Eruptions are apt to appear, usually on the cheeks, but sometimes on the head, or even over the whole body, and ulcerations of the tongue, gums, lips, or on the inside of the cheeks. Itching of the nose, twitching of the muscles, dilatation of the pupils, uneasiness and fretfulness, restless sleep or wakefulness, thirst and loss of appetite are evidences of increasing irritation, which, if not relieved, will be followed by more active manifestations. The child becomes cross, resentful, moans when asleep, cries persistently when awake; or if quiet for an instant will be found chewing its thumb or fingers, which operation seems to afford a momentary cessation of anguish—but only momentary. It throws down its toys as though in a passion, refuses to be amused, and treats all effort to divert it as an indignity; compresses its lips, corrugates its brow, shows an intolerance of light, pulls at its hair or ears, slaps or scratches its nurse, refuses its food or vomits it as soon as swallowed. Further manifestations of increased constitutional disturbance are likely to appear in persistent and copious diarrhoea, nausea, high fever and, not infrequently, convulsions.

There is reason to believe that earache is often associated with, and dependent upon, the difficult eruption of one or more teeth, and that, apart from the aggravation of the fever and the increased liability to con-

vulsions, incident to this added anguish, there is also the possibility of the loss of hearing (entailing in young children the loss of speech) from the congestion and inflammation which result. But this is not the only, indeed, not the chief danger: the inflammation is liable to extend to the membranes of the brain, and end in death.

The usual indications in the mouth of the advancement of the teeth are increased heat, redness, swelling, and hardness of the gum; and later, the peculiar whiteness caused by the pressure of the coming teeth. Sometimes the swelling takes the form of a little tumour, like a boil, on the edge of the gum; in other cases an ulceration will form over the presenting tooth. In all such conditions the gums are very tender, so sensitive that the slightest touch will cause pain, and the child, on attempting to take the breast, will jerk back its head—a manœuvre which is frequently mistaken as an evidence of colic.

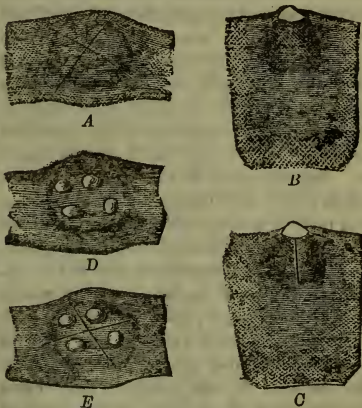
Sometimes, however, the irritation of dentition may produce the most serious constitutional derangements without any local manifestations. That such may be the case is apparent when the conditions of the parts concerned are understood. The troubles of dentition are caused to some extent, doubtless, by the direct pressure of the advancing teeth, and the consequent irritation of the nerves of the gums; but this is not the only, nor, it is believed, the principal factor in the disturbance. It must be borne in mind that at the time of eruption the roots of the teeth are not yet complete: that, instead of the conical termination and minute opening which characterize the root of the perfected tooth, the aperture is quite large and its edges thin and sharp. In estimating, therefore, the mischief which may result because of a lack of accordance between the eruption of a tooth and the absorption of the tissues which impede it, we may injure the sensitive nerve—which, when exposed to decay, is so intolerant of contact even with the atmospheric air—held between the bony socket and the sharp edge of the incomplete root by the backward

pressure of two resisting gums, thus giving rise to a true toothache, comparable only to that exquisite torture which is experienced in after-life from an exposed and irritated pulp.

It is not difficult to comprehend that a free division of the gum over the tooth or teeth thus situated may, by removal of the pressure, give immediate and complete relief. This simple operation of dividing the gum over the teeth which are next in the order of eruption is surely justified by local manifestations such as have been specified; it is also suggested by the occurrence of the usual symptoms of difficult dentition, even when there does not exist a single local indication in the mouth. Under such circumstances it would seem proper to give the child the benefit of the doubt by free incisions over the teeth whose eruption is, in accordance with general experience, to be anticipated—especially as the operation causes only a trifling amount of pain, inflicts no injury, and is practically free from danger.

The reasons for the methods of lancing which are considered to promise the best results are easy of comprehension. Premising that the object of lancing is not merely, nor chiefly, to induce a flow of blood, but to remove tension, it follows that the cuts should extend through the gums to the presenting surface, and should be made with special reference to the form of the coming tooth. The incisors need only a division of the gums in the line of the arch. The molars require a crucial incision, as shown in the accompanying illustration at *A*. In the case of either of the incisors, superior or inferior, owing to their straight edges, the slightest appearance of the tooth through the gum gives entire relief so far as that particular tooth is concerned. Not so, however, with the cuspids and molars. The cuspids, it will be remembered, have cone-shaped crowns, and therefore, even after the eruption of the points, still keep up the pressure by reason of the inclosing ring of gum, as shown at *B*. A complete severance of this ring on the lateral surfaces, as well as on the anterior and posterior faces, as

shown at *C*, is necessary to relieve the tension. So, all the cusps or points of a molar tooth may have erupted, and yet bands of gum tissue around and between them, as shown at *D*, maintain a resistance as decided as before their appearance, but which is entirely overcome by cuts as shown at *E*. If, after lancing, the cuts should heal before the tooth is fairly through the gum, the operation should be repeated as often as is necessary. Sometimes, but not often, there is a little too much bleeding, generally caused by the child sucking the gums, incited thereto by the taste of the blood. In



MODES OF LANCING THE GUMS TO FACILITATE DENTITION.

such case the substitution of the breast of the nurse will give the infant better employment. The extent of the bleeding can be ascertained by touching the wound occasionally with a napkin-covered finger; and when it continues longer than seems desirable, a little very finely powdered alum, rubbed into the incisions, almost entirely controls it. If this fail, and the case should require the attention of the physician or dentist, the trouble is still quite amenable to treatment.

Teething, Second Dentition.—

There is usually but little trouble attending the second dentition; but occasionally there

are considerable pain and swelling, and sometimes sore throat, difficulty in swallowing, earache, and even severe constitutional disturbance. Various distressing and obscure nervous affections have been found to depend upon the eruption of a sixth or twelfth-year molar. The third molars or wisdom teeth of the upper jaw are generally erupted without special trouble, except that which is the result of their contact, by misdirection, with the cheek, causing ulceration. The eruption of the wisdom teeth of the lower jaw generally causes considerable inconvenience and suffering, owing to their being crowded between the second molar and the ramus (the upright portion) of the jaw. The space being insufficient, the gum is pressed between the distal (rear) surface of the tooth and the ramus; the irritation produces swelling, and this is aggravated by the bruising of the gum—in mastication or by the teeth of the upper jaw. Inflammation is thus set up, which extends to the soft tissues of the adjoining parts, making the act of swallowing difficult and painful, and mastication impossible. Sometimes the inflammation results in suppuration, the pus finding exit at points more or less remote, internal or external. The trouble in such cases is generally of short duration, and ceases upon the complete eruption of the tooth. Other cases require lancing of the gum, or the removal of the overlying portion of gum; sometimes the extraction of the tooth or of the one in front of it. No general rule for the treatment of these cases can be given. It will depend upon the space in the jaw and the eruption of the tooth in a natural or unnatural position; if the latter, upon the form of the deviation. The nervous susceptibility and constitutional condition of the individual must also be taken into account. The record of troubles caused by the eruption of a wisdom tooth into a crowded arch shows cases of ulceration and sloughing of the adjacent tissues, disordered vision, earache, deafness, headache, neuralgia, hysteria, St. Vitus's dance, epilepsy, lockjaw, and various other serious disorders

—some exceptionally severe cases ending in death.

At six, at twelve, and at seventeen years of age, or until the wisdom teeth have been fully erupted, it is well for patients suffering from eye or ear troubles, or from any deranged condition not otherwise accounted for, to seek the opinion of a competent dentist, in order to learn whether or not an explanation is to be found in the mouth.

Temperament.—There are certain distinct states of bodily constitution called temperaments, under one or more of which all individuals may be classed. Five pure temperaments are usually spoken of—the sanguine, the phlegmatic, the nervous, the bilious, the melancholic.

These temperaments seldom occur in a pure form. Most people must be classed under two, at least—as the “nervous-sanguine;” or under three, as the “nervous-bilious-sanguine.” Persons of a sanguine temperament are more liable to acute inflammation than others; the nervous to mental and nervous affections; the phlegmatic-sanguine to phthisis; the phlegmatic to scrofula; the phlegmatic-bilious to gout; the bilious to hypochondria and disorders of the digestive organs.

Temperament and Sleep.—It may be observed that a plethoric habit of body, kept up by full diet, especially of animal food, predisposes to sleep, provided the digestive powers are in vigorous condition. Persons of this constitution frequently pass nine or ten hours out of the twenty-four in slumber, and assert that they cannot be adequately refreshed by less. On the other hand, thin, wiry people, in whom the nervous temperament predominates, usually require comparatively little sleep, notwithstanding the greater activity of their nervous systems when they are awake; but their slumber, while it lasts, is very deep. Persons of lymphatic temperament—heavy, passionless people, who may be said to live very slowly, are usually great sleepers, but this rather because, through the dulness of the

senses, they are less easily kept awake by external impressions of any kind. The amount of sleep is, as already intimated, greatly influenced by habit, and, contrary to what might be anticipated, we find that exceptionally brief sleepers have generally been men of the greatest mental activity. Thus, Frederick the Great, John Hunter (the famous English surgeon), and the first Napoleon are said to have required only five hours' sleep out of the twenty-four.

Probably few, however, can sustain a life of vigorous exertion upon a smaller allowance than six to eight hours of sleep, and, as a general rule, as we have already hinted, from six to eight hours of repose out of every twenty-four are required to keep the system in a state of healthful activity. Of course, as we all know, a few days or nights may generally be passed almost sleeplessly without any serious injury to the health; but prolonged watching from any cause whatever inevitably breaks down the strength, and, if further continued, will undermine the constitution.

Temperaments as Modifying Disease.—The temperaments, of which four are generally accepted, viz., the sanguine, the lymphatic, the bilious, and the nervous, exercise considerable influence as modifiers of disease-producing agencies. Persons of a sanguine temperament are believed to be especially liable to organic disease of the heart, to aneurisms, and to the bursting of blood-vessels in various parts of the body; so that they should especially guard against articles of food and habits of life which promote the formation of an excess of blood in the system. Individuals of lymphatic temperament seem particularly prone to scrofulous affection, consumption, dropsy, and skin diseases. Those of bilious temperament, on the other hand, are liable to diseases of the liver, stomach and intestines, and those of nervous temperament to palsy, St. Vitus's dance, epileptic fits, etc.

Temperance Drinks (*Lat. tempero*, I mix in proportion, or keep within

M. D.

bounds; from *tempus*, time).—Of these the name now is legion, and many of them are excellent—agreeable to the palate and exercising a favourable effect on the constitution. They should, however, be partaken of in moderation; indeed, when all is said, he is a sensible total abstainer who limits himself on all occasions to pure water. Perhaps the best temperance drinks are the old favourites, lemonade and ginger-beer.

Temperate Bath.—See COLD BATH.

Temperature of Body, Rise and Variation in.—See THERMOMETER AS TEST OF FEVER.

Temperature of Sick-Room.—The temperature of the sick-room should be a matter of primary importance, and yet it is frequently neglected, as if it were not essential in the treatment of disease.

Those suffering from fever, or from chest affections, cannot fail to be affected by the temperature of the apartment in which they lie, and yet how often do we find the sick-room allowed to get close and over-heated, and the window, which till now has been closed, thrown suddenly open to allow a supply of fresh air to enter the room. Or, again, the window may have been kept open a few inches, and the air may have been entering the room imperceptibly, but in sufficient quantity to keep the atmosphere cool and fresh, when the nurse, who has allowed the fire to get very low, suddenly takes to heaping it with coals, and, after perhaps filling the room with smoke, the fire blazes up, and cold air rushes in with greater rapidity. The patient suffers from what might easily have been prevented and ought never to have occurred.

A good fire in the sick-room, kept burning equally, will suffice to maintain a uniform temperature, but care must be taken to have a good chimney.

The temperature which answers best in the sick-room in most cases is one somewhere between 57° and 60° Fahr. Should it be found desirable to increase this, it can

be easily done by permitting steam to pass into the room from a kettle; or if, on the other hand, it is necessary to cool the air of the apartment, this can be readily accomplished by placing a shallow dish containing pieces of ice in the room, or by suspending a piece of cloth that has been previously moistened with water.

Temperature, Ordinary, of Adults.—See ANIMAL HEAT.

Temperature, Proper.—See PROPER TEMPERATURE.

Temperature, Proper, of Baths.—See BATHS, PROPER TEMPERATURE OF.

Temperature, Pulse, and Respiration.—These are so intimately con-

Any considerable deviation from these averages means a disturbance of health for the time; or, if constant, some constitutional difficulty.

Temperature, Right, of Baths.—See BATHS, RIGHT TEMPERATURE OF.

Temporary Teeth.—See DECIDUOUS TEETH.

Tendencies to Disease (*Lat. tendo, I stretch out or aim*).—Those who are accustomed to consider disease detect many tendencies which others overlook. Physicians know there are critical years, days, and hours belonging to everybody—certain periods in which susceptibility is increased

TABLE OF THE CONCORDANCE OF THE VITAL SIGNS—TEMPERATURE, PULSE, AND RESPIRATION.

Age.	Temperature above the normal.		Pulse.	Respiration.
At birth	1	·5	120-150	40-60
2nd to 3rd day	2	·2		
7th day	2	·6	120	40
1st month	5	·5		
1st year	25	·5	105-130	30-40
3rd year	4	·5	95-105	23-26
7th year	21	·5	80-90	22
15th year	31	·5	75-85	20
Adult (21st year)	0	·5	70-75	16-18

nected that anything affecting one is likely to affect the others. Pulse and respiration are, however, more readily disturbed and deviate more in sickness from the normal condition than does the temperature; but the variations of the temperature express more correctly the condition of the patient.

With children, sleep, anger, suckling, slight indigestions, etc., all cause alterations in the pulse and respiration, which are of no moment unless they continue, and are accompanied with changes in the temperature, in which case a general trouble of the system is indicated.

And the same is true of adults, with whom, though, variations of either one of the vital signs are more important than with children.

or altered. There is a mysterious law of nature indicative of powers in action beyond the ken of science. A sort of sympathy exists between the body and the globe we dwell on, giving a tendency to the recurrence of certain states at certain intervals, and so controlling, by time and measure, the influences which operate upon us, that many of the events which most nearly concern us may be calculated with arithmetical precision.

Tendons (*Fr. tendon; from Lat. tendo, I stretch, spread*).—Tendons are the strong inelastic cellular extensions by means of which the muscles are attached to the bones. The tendons are popularly

known as "the guides," and one of the best known of them—best known by name, at least—is the tendon Achilles, which any one may feel in his own person. The Achilles tendon attaches the soleus and gastrocnemius muscles of the calf of the leg to the heel bone. Though capable of resisting a force equal to a thousand pounds weight, it is frequently ruptured by the contraction of these muscles in the sudden extension of the foot. In the name of the tendon we have a reference to the death of the Grecian hero Achilles by a wound in the heel. Ancient surgeons used to look upon wounds or serious bruises of the Achilles tendon as fatal.

Tendons, Uses of.—A great many of the muscles terminate at one or both ends in what is called *tendon*—sometimes constituting *cords*, as in the wrist and ankle—which is a white, hard, firm, inelastic cellular substance, very strong, and is for the purpose of attaching the ends of the muscles to the bones. In some instances the tendon of a muscle spreads out, or expands in its attachment, and then it is called *fascia* or *aponeurosis*. This fascia, or expansion of tendon, becomes quite thick in some places, and serves as a protection to parts beneath, as in the palm of the hand and sole of the foot.

These tendons, or *sinews*, as they are occasionally named, conduce greatly to symmetry, elegance, and freedom of motion; and may be traced under the skin on the back of the hand, and in the very powerful specimen at the heel, called the tendon Achilles. The hamstrings are another obvious example, and may be easily felt becoming tight when an effort is made to bend the knee. There are a few muscles not attached to bones by either extremity, and also a few which have no tendons. Those which surround the eyebrows, the mouth, the gullet, and some of the other natural passages, are of the former description, as is also the heart. Some of the muscles of the trunk have no tendons, but these are few in number, and may at present be considered exceptions to the general rule.

Tepid and Warm Baths (*Lat. tepidus*, from *tepeo*, I am moderately warm).—Tepid and warm baths are used in disease to promote perspiration and increase the action of the skin when the latter is hot and dry. It is necessary when these baths are employed to maintain the temperature of the water uniform throughout; and, in order to insure this being done, the water should be tested from time to time by the thermometer, and hot added when necessary. The period of immersion varies from a quarter of to half an hour. These baths are of great service in the diseases of children. If the child is too feeble to sit erect, a sheet may be spread from one side of the bath to the other, and the child lowered to the necessary depth.

Tertian Ague.—See AGUE.

Tetanus (*Lat. tetanus; Gr. tetanos*, stretching or stiffness; from *teino*, I stretch).—Tetanus is a violent and extensive contraction of the muscles, attended with tension and rigidity of the parts affected. The excessive contraction of the muscles is kept up, without any intervals of complete relaxation, mostly without any relaxation whatever; but the powers of sensation and intellect are unimpaired.

Either the whole or a part of the body may be attacked with this malady. Sometimes only the flexor muscles are affected, when the body is rigidly bent forwards; sometimes only the extensor muscles, when it is as rigidly bent backwards; at other times, both sets of muscles are involved, and the body is rigidly erect. Where its effects are confined to the muscles of the jaw or throat, it is called lockjaw.

Tetanus, Causes of.—The most common causes are scratches, punctures, lacerations, or other mechanical injuries. Considerable irritation in the digestive organs seems also sometimes to give rise to this disease. It is much more frequent in warm than in temperate climates, and especially in the hot seasons of these climates.

The male sex more frequently suffer than the female, and the robust and vigorous more frequently than the weak.

Tetanus, Symptoms of.—This disease differs greatly in different cases, in the intensity of its symptoms, or in the mode in which it makes its attack. Generally speaking, the commencement of the disorder is announced by a sensation of stiffness about the neck, which increasing, the motion of the head becomes painful. There is a difficulty and pain in swallowing; there is also a severe pain at the bottom of the breast-bone, darting backwards to the spine; the spasms of all the muscles of the neck become exceedingly violent, and together with the spasm at the pit of the stomach recur every ten, fifteen, or twenty minutes. At the same time that the spasms increase, the retraction and rigidity of the muscles affected become stronger; the belly feels as hard and tense as a board; and the body is drawn forward, backward, or to one side, according to the muscles chiefly affected. In the extreme period of the disease, one set of muscles contract so powerfully as to counterbalance the force of the opposite set, and hold the head and trunk in a straight, fixed, and immovable position. The muscular contractions in tetanus are always accompanied with the most excruciating pain; and when the disease arrives at its height, a violent convulsion usually puts an end to the patient's misery.

Tetanus, Treatment of.—No continued success has yet attended the administration of any one of the numerous medicinal agents that have been tried in cases of severe tetanus: calomel, opium, chloroform, belladonna, aconite, quinine, Calabar beans and Indian hemp have all been extensively used; in some cases with undoubted good results, in others with signal failure. No drug is yet known which has the power of arresting the course of the disease, and of controlling its severer symptoms. So long as tetanus is to be regarded as a disease which must run a certain course,

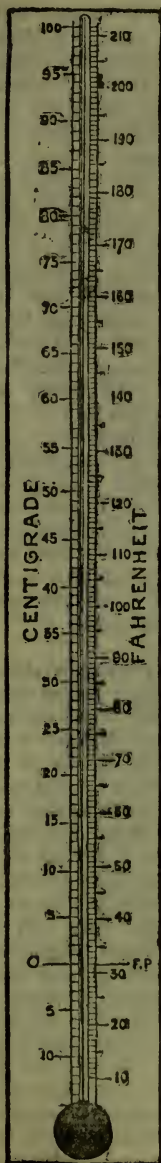
the chief indications of treatment will be the support of the patient's strength and the relief of suffering and pain. Fluid and easily digested food, with wine or spirits, must be freely supplied, and when the patient is unable to open the mouth or to swallow, should be administered by enemata or through an elastic tube passed through the nose into the gullet. Pain may be relieved by the internal administration of opium, by subcutaneous injections of morphia, or by inhalation of chloroform. In many cases painful and violent muscular spasm has been much allayed by the application, along the spine, of bladders of ice. Great care must be taken to guard the patient from all causes of excitement and irritation, and the room in which he is confined should be kept darkened and at a uniform temperature. It is very important that there should be a speedy and free evacuation of the bowels. In cases of traumatic tetanus following a wound, the injured part, if painful and inflamed, should be poulticed and kept as much as possible at rest.

Tetter, Dry.—See PSORIASIS.

Tetter, Moist.—See ECZEMA.

Theories of Digestion.—See DIGESTION, THEORIES OF.

Thermometer (*Gr. thermē, heat; metron, measure*).—The thermometer, or heat-measurer, as shown in the accompanying illustration, consists of a bulb at the end of a capillary or hair-like tube of glass. The whole being filled with boiling mercury, the end of the tube is hermetically closed: as the mercury cools it contracts, leaving a vacuum in the tube above it, and the subsequent rise and fall of the slender column in the tube serves to indicate the changes of temperature. On the Fahrenheit scale—that generally used in this country—O is 32° below freezing point, and the temperature of boiling water is 212°. On the centigrade scale O is freezing point and 100°



THERMOMETRIC SCALES.

boiling water. Consequently, as will be seen, 180° Fahrenheit corresponds to 100° centigrade, or the degree Fahrenheit is five-ninths of the degree centigrade.

Thermometer as Test of Fever.—Until within a recent period it was customary to judge of the intensity of the fever by the sensation of heat imparted to the hand of the observer, as well as by the frequency and character of the pulse, and the symptoms in general. In addition to these methods of observation, we are now enabled to ascertain the actual temperature of the body by means of a pocket thermometer, made for the purpose, the bulb being placed in the patient's armpit or mouth. The temperature thus taken in healthy persons is 98.4° Fahrenheit. It is found to be the same in all persons in health, and in all latitudes, with slight variations. It is therefore called the *norme*, or normal temperature. Transient variations within a degree do

not indicate disease, especially in childhood, at which period of life the temperature is more easily influenced than afterwards. In shock, collapse, and immediately after the loss of blood, the temperature falls; very great activity causes it to rise, as does inflammation of an acute character. An increase of a degree or a degree and a half, that is continuous, indicates fever. The thermometer in fever often rises to 102° or 104°. If it reach 105° in continued fever, the case is grave; a temperature of 106°, which does not promptly fall, indicates great danger, and above this a fatal result is to be dreaded. In periodical fevers, when the rise in temperature is of short duration, it is frequently very high. In fatal cases of acute rheumatism it may reach 109° or 110°, and it may even reach 110° or exceed that in sunstroke, which is a fever of great intensity. In many instances, where death takes place in consequence of the rapid overwhelming increase of the heat of the body, the temperature rises a degree or even more during the first hour or so after life has been extinct.

Thermometer, Moral and Physical.—See MORAL AND PHYSICAL THERMOMETER.

Thigh Bone.—The thigh bone is articulated by means of a large round head deeply sunk into a corresponding hollow in the pelvis; freedom of motion being thus combined with great security. The thigh may be moved backwards and forwards, as in walking; and also outwards and inwards, as when sitting on horseback, or with the legs crossed. The socket being much deeper than that of the shoulder joint, the thigh bone has not the same range of motion as the humerus, but it has proportionally greater security.

Thigh, Fracture of the (*Lat. fractus, broken; from frango, I break*).—A case of broken thigh is the most difficult to undress. The injury is in itself a serious one, and is liable to become much more so

by rough or clumsy handling. In a case of this kind, the bedclothes should all be turned back to the foot of the bed, and the patient laid in the middle, having previously taken care to protect the under sheet with a rubber cloth, if the clothes are dirty. If the patient be a male, remove the coat, waistcoat, and collar as gently as possible. The outer seam of the trouser leg containing the injured limb should then be ripped up until the trousers are completely open, waistband included. The buttons should then be unfastened (the sheet being first thrown over the patient to prevent unnecessary exposure), and the cut trouser leg drawn with the utmost care and gentleness from under the whole length of the leg to the inside, the hand being slipped under the thigh, if necessary, to avoid all dragging. The body of the patient must then be gently raised, sufficient to draw the body of the trousers from under him; the other trouser leg can easily be drawn off while the sheet is kept over the patient. The sock or stocking should be cut open down the seam of the leg, and the foot drawn off, while the ankle is firmly but gently held without raising the leg, in order to avoid any jarring of the broken thigh.

A bed or couch is the proper resting-place in cases of fracture of the leg or thigh, as the recumbent is the only easy posture; and you need not be anxious to extend the limb, as most unprofessional persons would advise, but let it be in a relaxed position till the arrival of the surgeon.

Thinkers, Great, Liberal Feeders. — See GREAT THINKERS, LIBERAL FEEDERS.

Thinking and Digestion. — It seems to be a law of the animal economy that two classes of functions cannot be called into vigorous action at the same time, without one or other, or both, sooner or later, sustaining injury. Hence the important rule never to enter upon continued mental exertion, or to rouse deep feeling, immediately after a full meal, as the ac-

tivity of the brain is sure to interfere with that of the stomach, and disorder its functions. Even in a perfectly healthy person, unwelcome news, sudden anxiety, or mental excitement, occurring after eating, will put an entire stop to digestion, and cause the stomach to loathe the sight of food. In accordance with this, we learn by experience that the worst forms of indigestion and nervous depression are those which arise from excessive application of mind, or turmoil of feeling, conjoined with unrestrained indulgence in the pleasures of the table. In such circumstances, the stomach and brain react upon and disturb each other, till all the horrors of nervous disease make their unwelcome appearance, and render life miserable. Literary men and hard students know this fact from sad experience; but, as they are not aware of the incompatibility of the two processes of active thinking and active digestion going on at the same time, it is extremely difficult to give them a sense of their danger, and to convince them that an hour or an hour and a half after a meal is more profitably spent in easy relaxation than in the labour of composition.

Thirst.—Thirst is a sensation closely resembling hunger in being a general sensation, although it is generally considered only as local, arising from the dryness of the mouth and throat. This dryness of the mouth and throat is produced by a deficiency of liquid in the body; but it may be, and often is, produced when there is no deficiency in the general system, nothing but a local disturbance, this disturbance producing a local sensation. Men have been known to endure absolute privation from food for some weeks, but three days of absolute privation from drink (unless in a moist atmosphere) is perhaps the limit of endurance.

The effects produced by thirst are, first, a dryness of the mouth, palate, and throat; the secretions become less copious; the mouth is covered with a thick mucus; the tongue cleaves to the palate; the voice becomes hoarse; the eyes flash fire; the breathing grows difficult; a feverish excitement,

often passing into delirium, comes on. Sleep also grows fitful. It is to be observed that the sensation of thirst is never agreeable, no matter how slight it may be, and in this respect it differs from hunger, which in its earlier stages is decidedly agreeable.

Thirst is certainly under the control of habit: those who indulge in the habit of frequent potations are rendered thirsty by its privation. There are some persons who have never experienced the sensation, and who only drink from a sort of sympathy, but who could live a long time without thinking of it, or without suffering from the want of it.

The sensations of hunger and thirst appear to be incompatible with each other: when the stomach requires food, there is no inclination to drink; and when thirst rages, the very idea of solid aliment disgusts us. So, again, those circumstances which tend to destroy appetite may even excite thirst, such as the passions of the mind, etc.

Thirst, When Felt.—The feeling of thirst in a healthy person, nourished on wholesome food, comes on distinctly when the body has lost about one pound of water, this loss being about the sixth part of the daily loss of water, and nearly the one-hundredth part of all the water present at any moment in the body.

If we take violent exercise, or should the air be unusually dry and warm, then the ordinary loss of water is increased and must be replaced by a larger supply. If we take more salt than usual, or consume certain very savoury foods, or swallow those medicines which increase the flow of saliva, of gastric-juice, and other very watery secretions of the body, then again we must make up the extra loss by an extra supply of fluid. And when we are out of health, when our pulse is high and our digestion imperfect, then also our mouth and tongue become dry and moist, and we often experience a feeling of thirst which does not always correspond to a real want of the system.

Thoracic Duct (*Lat.* and *Gr.* *thorax*, breast or breast-plate; *Lat.* *ductus*, led, from *duco*, I lead).—The thoracic duct, which may be regarded as the trunk of the absorbents, because it receives the absorbent vessels from almost every part of the body; including of course the lacteals, though small—being only about the size of a goose-quill in diameter—is a very important organ in the human organization. It commences at the lower end and back part of the abdominal cavity, and passes upward along the spine, by the side of the aorta, as high as the lower part of the neck on the left side, or opposite the seventh cervical vertebra, where it makes a sudden turn downward and forward, and enters the left internal jugular vein, just under the left clavicle or collar-bone. It pours its fluid, the chyle, into the current of the venous blood, going direct to the heart.

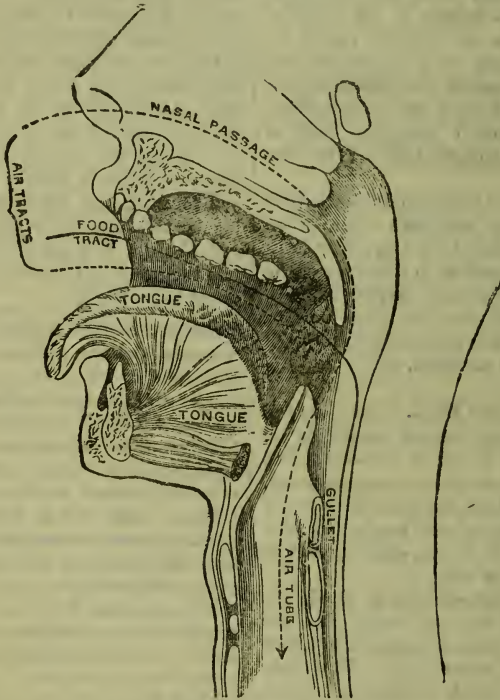
Three Meals a Day.—Eat thrice a day only, and not an atom between meals, and thus avoid dyspepsia. The steady pauper who was kept picking oakum all day was heard to soliloquize near dinner time—“This working between meals is killing me by inches.” Now, however this might be, it is the incessant working of the stomach between meals which kills it, so far as efficient labour is concerned; that is, persons who eat frequently through the day—as young girls about the house and others are apt to do—wear the stomach out, lay the foundation for lifelong tormenting dyspepsia by eating too often; for it requires about five hours to digest a meal and pass it through the stomach, and it cannot rest until the work is done, as long as there is any undigested food in it; and as no muscle in the body can work all the time, so there should be about five hours between the three meals of the day; and even as young as ten years the habit should be begun of eating nothing whatever between meals.

Throat, The.—The throat is the common highway, so to speak, for the passage of air to the lungs, and of food to the stomach.

It is protected and enclosed by various muscular and bony structures, chiefly occupying the neck, along which, too, course the great blood-vessels that nourish the head and the brain, as well as the great nerve-trunks that pass from the brain to the lungs, heart, stomach, and intestines, and other

posed, in addition, to the baneful influences of whatever deleterious substances may happen to be floating in the atmosphere.

A diagrammatic anatomical sketch of the throat and neck is given in the accompanying illustration, showing the double line taken by the air through the nose and the mouth



DIAGRAMMATIC ANATOMICAL SKETCH OF THE THROAT AND ADJOINING STRUCTURES, IN VERTICAL SECTION, TO INDICATE THE COURSE OF THE AIR AND FOOD TRACKS.

organs, while the strong bones at the back of the neck enclose the most important, or most vital, part of the spinal cord.

Thus, the throat and the neck together are very important regions of the body. The neck is directly exposed to atmospheric changes of wind and moisture, which sometimes induce disease in the throat or in the lungs; and the interior of the throat is ex-

posed to the air-tube, as designated by the dotted lines, and the single route taken by the food through the mouth into the gullet, behind the air-tube, indicated by the unbroken line.

Thrush, Gargle for.—See GARGLES.

Thyme.—This is a small labiate shrub, *Thymus vulgaris*, of Southern Europe, not

a native of England. Its odour and taste result from an essential oil known as origanum oil.

Tibia (*Lat. tibia*, shin bone).—The *tibia* is the principal bone of the leg, and is the only one articulated with that of the thigh. Its lower end forms the projection at the inner ankle. The *fibula* is the long, slender bone at the outer side of the leg, the lower end of which forms the outer ankle. The tibia and fibula both contribute, to the formation of the ankle joint, which, like that of the knee, is almost limited to flexion and extension.

Tibia, Fracture of the.—In the

below the eye and extends over the cheek, and on to the side of the nose. This, too, may be affected, and very often is so, especially when the teeth on the corresponding side are decayed. The third branch of the nerve extends along the lower jaw, and is not so often the seat of pure neuralgic pain as the others. The branch on the forehead may be affected without any definite cause being ascertainable. But in the other branches a cause is much more likely to be found in some decayed teeth, or some condition of the jaw which gives rise to irritation, and though such maladies are included under the heading neuralgia, they are rather instances of pain produced in one spot appreciated by the sensory centres in another.



FRacture OF THE TIBIA.

accompanying illustration a representation is given of the fracture of the tibia or inner of the two bones of the leg, showing the resulting inversion of the foot.

Tic Douloureux (*Fr. tic*, convulsive movement of muscle; *douloureux*, mournful; from *Lat. dolor*, grief).—Facial neuralgia, or tic, is, perhaps, the most common of all, and as the nerve attached is made up of three branches, any one of these may be affected. One of these branches goes to the eye, and a part of it passes out from the orbit and turns up over the forehead. This is often the seat of pain, and when so, the neuralgia generally affects one side of the forehead, extending upwards towards the hair. The next branch of this nerve comes

(For general treatment, etc., See NEURALGIA.)

Tight Lacing.—The diseases which result from this interference with nature are various; and though they do not all occur in every female who adopts this mischievous practice, yet on inquiry too many may be traced to this source. Of these diseases, consumption is the most frequent and fatal. Nor is the real object of all this painful and irksome compression in any instance attained. The figure of the female bust may be altered by it, but not improved. Sculptors, who are the closest observers of nature, and who transfer to their statues every beauty presented to their eye, have invariably given ample dimensions to the lower

part of the chest. The more, therefore, any female, not of unnatural proportions, compresses her waist, the more does she depart from resemblance to "the statue which enchants the world."

The accompanying figures, taken from Professor Soemmering "On the Effects of Stays," will illustrate this.

When the normal vertical bearing of the body is maintained, every part above rests upon that below. The head rests upon the upper part of the vertebral column, the

abdomen is thrown into the pelvic cavity, causing displacement and prolapsus of the organs situated there.

Since laces have been discarded and firm hooks and eyes used to fasten the corset, there may have been a decrease in chest diseases, but there has been a corresponding increase in uterine diseases. Some of the mechanical supports that have been invented for uterine displacements are adjusted with the design of restoring the natural curve in the lower portion of the vertebral column,

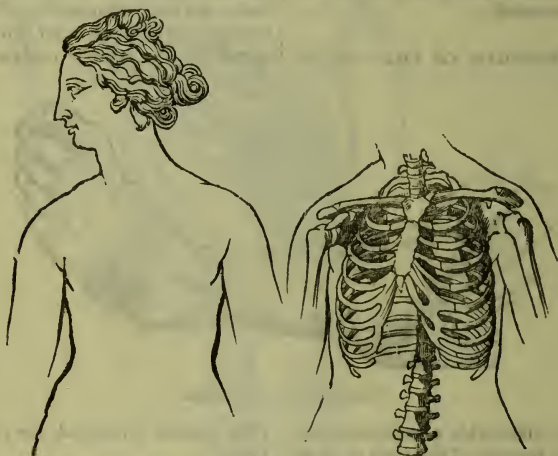


FIG. 1.—THE NATURAL FIGURE.

weight of the trunk upon the hips; and the same plan is carried out through the lower extremities to the arch of the foot. When the body is in this position, the vertebral column has two curves—a lesser curve above, that gives increased capacity to the chest, and a greater one below. Then the abdominal muscles are tense, and the weight of the contents of the abdomen is thrown upon the pubic portion of the pelvis. But when these muscles are weakened and relaxed, and the greater and lower curve in the spinal column is impaired, owing to pressure from above, the weight of the contents of the

thus giving the abdominal muscles their true lifting power, and throwing the weight of the abdominal viscera upon the pubic bones of the pelvis, where it belongs.

When questioned, ladies rarely admit that they wear their clothing tight. The hand can be readily passed under the bands, when the diaphragm is relaxed and the air is expelled from the lungs, and their garments are therefore considered loose and comfortable.

Tight Rings.—A common accident to a finger is the unintentional confinement of

a ring with so much tightness as to prevent the withdrawal of it by any ordinary means. This sometimes arises from some sudden swelling of the finger, at other times from slow and gradual growth of the finger in size, when the person has neglected to remove the ring for years. But the inconvenience arises more frequently from the person's own indiscretion in forcing on a ring that is too small, when the ineffectual efforts to withdraw it increase the evil by bringing on soreness and inflammatory

the ring, draw it tight, and then begin to untwist the string from around the finger, and the ring will be gradually brought down the string at the same time. When all these things fail, the ring must be filed off, as the consequence of its retention will be ulceration and perhaps mortification.

Tight Shoes.—The great inducement to indulging in tight shoes is to make the feet look small and neat; but the practice is very indifferently calculated to attain



FIG. 2.—THE FIGURE COMPRESSED BY TIGHT LACING.

swelling. In all these cases first try the effect of cold by immersing the hand in ice-cold water; if this does not alone reduce the swelling, hold the hand up so as to encourage the return of the venous blood, and, at the same time, apply cold by means of wet rag. If this also fail, make trial of the following ingenious device, which very frequently proves successful. Wrap a piece of packthread closely and tightly round and round the finger, beginning at its extremity, until the ring is reached, then insert the end of the string by means of a fine blunt bodkin, or other such instrument, under and through

either object. A custom of wearing tight shoes will in time compel us to use them larger than we should otherwise need. High-heeled boots are also very objectionable, and sure to produce serious and permanent damage to the feet of the wearers.

Mrs. Haweis, speaking of the feet in the "Art of Beauty," says:—"Every artist knows that any foot that has worn a shoe is deformed. The great toe is bent in towards the rest of the toes, instead of being boldly parted. The other toes are crushed and shortened. How seldom in real life does one find the second toe longer than the

810 Time, Best, for Walking.—*Tinea Trichophytina*, or Ringworm.

great one, its natural length! If an artist wishes to make studies of a beautiful foot,

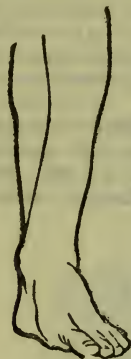


FIG. 1.—NATURAL SHAPE OF THE FOOT.

does he choose the smallest-footed lady of his acquaintance and copy those 'little mice' of hers? No, he ignores the whole race of English and French women. He goes off to the East, or to the fish-women on the shores of Italy, who have never worn a shoe; there he studies the free-practised muscles, the firm steps, the ineffably graceful movements. One may see in the pictures of Mr. Leighton, who has made a special study of feet, what feet ought to be."

In Fig. 1 the natural shape of the foot is



B A

FIG. 2.—SOLE OF THE FOOT: A, NATURAL SHAPE. B, SHAPE PRODUCED BY PRESSURE OF TIGHT BOOTS.

shown as seen from above, and in Fig. 2 the natural form of the sole of the foot and

the normal disposition of the toes is exhibited at A, and at B the shape of a foot distorted by wearing tight boots.

Time, Best, for Walking.—See WALKING, BEST TIME FOR.

Time for Exercise, Right.—See EXERCISE, RIGHT TIME FOR.

Time for Sleep, Proper.—See SLEEP, PROPER TIME FOR.

Times of Eating.—The frequency with which food should be taken depends upon various conditions. It varies with different races and in different climates, and according to the amount of labour performed and the quality of the food. This, as well as many other questions of diet, must be answered by experience.—See BREAKFAST, LUNCHEON, DINNER, TEA, SUPPER.

***Tinea*, or Ringworm** (*Lat. tinea*, worm that infests the human body).—The word *tinea* has been adopted of late years to indicate the group of diseases which are caused by the presence and growth upon and in the skin of a vegetable parasite. The affections coming under this head are really three in number, and are distinct from each other: they are all known as vegetable parasitic eruptions. They are, first, the various forms of *ringworm* of the body, scalp, head, etc., which have the general name *tinea trichophytina*, because caused by the parasite known as *trichophyton tonsurans*. Second, we have *favus*, or *tinea favosa*, popularly known as crusted or honeycomb ringworm. Third, the *tinea versicolor*, or *liver spots*. Each of these varieties of ringworm must be briefly touched on.

***Tinea Trichophytina*, or Ringworm of the Scalp.**—Ringworm, as properly understood, has nothing to do with any worm or animal life, but is caused by the growth in the skin of a low form of vegetable life allied to ordinary mould. When

some of the scales of a hair affected are placed in liquid, and magnified about 300 times, we can then very readily see the spores, or seeds, and the mycelium, or thread of the fungus, as shown in Figs. 1 and 2. In Fig. 1, in which is shown, greatly magnified, the scale from ringworm of the body, the faint outlines are the edges of the epidermal cells; the heavier-jointed masses are the mycelium of the *trichophyton tonsurans*. In Fig. 2, in which is shown a hair from ringworm of the scalp, greatly magnified, the shaft of the hair is penetrated with the mycelium, and adjoining are groups of spores of the *trichophyton tonsurans*.

Ringworm of the scalp shows itself as a

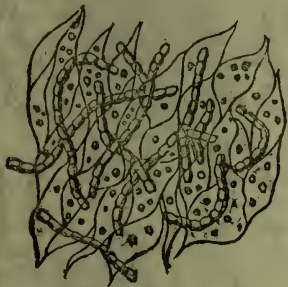


FIG. 1.—SCALE FROM RINGWORM OF THE BODY. (Greatly magnified.)

dry, scurfy, or scaly condition of some portion of the scalp, generally in separate patches more or less circular, on which the hairs are broken off, and the surface presents a dirty appearance, with some redness beneath. In cases which have lasted long, a large portion of the scalp may be invaded, and there may be very little of the broken-off or nibbled-off appearance.

On the face, body, or limbs the disease appears in the form of rings of various sizes, generally pretty round, and of a reddish colour; they commence as minute points, and increase in size pretty rapidly, healing in the centre as the disease progresses centrifugally.

In the beard this disease forms what is known as *barber's itch*, and may prove at

times a very obstinate and annoying difficulty.

All these eruptions, as also *tinea favosa*, are contagious, and children with them should not go to school or play with others so as to expose them, nor should one with ringworm of the scalp or beard go to the barber's to have the hair cut or to be shaved.



FIG. 2.—HAIR FROM RINGWORM OF THE SCALP. (Greatly magnified.)

Some of the cases of ringworm of the face or hands in children or adults are trivial matters, and may be safely treated at home by such remedies as ink, vinegar, etc.; but ringworm of the scalp or beard always requires very careful attention, and is often very rebellious at the best. Very frequently it can be cured only by epilation, that is, the extracting the hairs separately by means of forceps, and the subsequent application of very severe remedies.

Tinea Favosa, or Porrigo.—This variety of tinea is due to the growth of another fungus, and is not nearly so common as the ringworm described under "*Tinea trichophyllina*." This is the *porrigo* of some older writers. When fully developed, it is seen in the form of small cup-shaped crusts of a pale yellow colour, which may be picked off quite readily, and are found to be easily broken up and leave behind them a small red depression devoid of cuticle. These crusts are formed entirely



FIG. 3.—SPORES AND MYCELIUM OF THE *ACHORION SCHOENLEINII*, FORMING THE CRUST IN FAVUS. (Greatly magnified.)

of the mass of growth of the vegetable parasite or mould, as shown in Fig. 3.

Tinea Versicolor, or Liver

Spots.—The third and last variety of disease caused by a vegetable parasite is the *tinea versicolor*, formerly called "liver spots." *Tinea versicolor* appears principally upon the chest and back, from which places it may sometimes spread on to the arms and neck, and even cover most of the body. It is made up of a number of patches of a light brown colour, which are generally roundish and of a size varying from that of

a pin's head to an inch or more in diameter. They are not elevated, but almost on a level with the skin, and are either a little scaly on the surface, or may be made to scale with a slight scraping. If the scales be moistened with equal parts of *liquor potassæ* and glycerine, and magnified 300 times, the spores and threads of the vege-

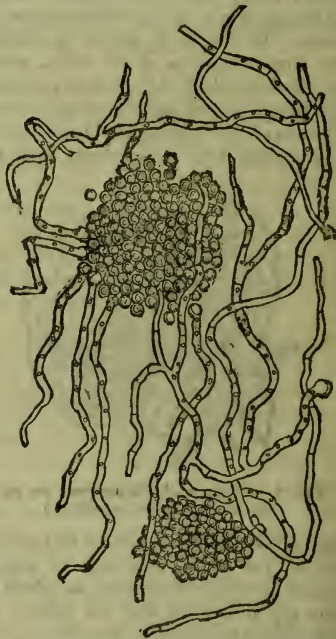


FIG. 4.—SPORES AND MYCELIUM OF THE *MICROSPORON FURFUR*, CAUSING *TINEA VERSICOLOR*. (Greatly magnified.)

table growth can be plainly recognised, as shown in Fig. 4.

Tinea, Treatment of.—The vegetable parasitic eruptions grouped under the general term *tinea* or ringworm being wholly local diseases, acquired by contagion, require only local applications, as a rule, for their removal. The remedies are called *anti-parasitic*, and are such as de-

stroy the life of the plant, largely preparations of mercury, sulphur, and tar. As used by medical guidance, they are perfectly harmless, and among hundreds of these eruptions thus treated no harm has come to the patient.

Toast and Water.—A good way of using boiled water as a beverage is to pour it quite boiling upon a thin slice of well-browned toast. The toast and water thus made is pleasant and wholesome. In fact, the simplest addition which is made to water for the purpose of producing a light and agreeable beverage is imparting to it the taste and colour of a piece of toasted bread. Its only advantage over simple water, for which it may at any time be substituted, seems to be that, in consequence of the slight flavour which it receives, the disagreeable flatness which plain water after standing awhile always acquires, is not perceived. In some cases, moreover, slight adventitious tastes which water sometimes possesses, to a degree sufficient to render it disagreeable as a beverage, may be removed or counteracted by the charred surface of the bread. Sailors act on this principle when they endeavour by means of burnt biscuit to correct water which has been injured by long keeping.

Toast and Water, Recipe for.—The following is a good receipt for making toast and water. Take a slice of fine and stale loaf bread, cut very thin (as thin as toast is ever cut), and let it be carefully toasted on both sides, until it be *completely browned all over*, but nowise blackened or burned in any way. Put this into a common deep stone or china jug, and pour over it from the tea-kettle as much boiling water as you wish to make into drink. Much depends on the water being actually in a boiling state. Cover the jug with a saucer or plate, and let the drink cool until it be quite cold; it is then fit to be used. The fresher made the better, and of course the more agreeable. This is the best way of making toast and water; but if, in the

absence of boiling water, it be made with that which is cold, the drink will be much better than common water.

Toast and Water for Invalids.—Cut half a slice of stale bread, toast it thoroughly, and put it into a jug. Boil a quart of water, allow it to stand till cold, and then pour it over the bread. A little lemon or lemon peel may be added. After it has stood for two hours, decant. This forms a very agreeable drink in febrile affections.

Toasted Cheese.—Toasted cheese, though more agreeable to most palates than raw, is more indigestible and unwholesome in this form than cheese in its ordinary state. Persons whose stomachs are easily thrown into disorder are therefore cautioned against partaking of it.

Tobacco (*Fr. tabac; Spanish tabaco*; from Indian name).—Tobacco is made from the leaf of an American plant called *Nicotiana tabacum*, and appears to have been employed for smoking by the natives of South America from the earliest times. A knowledge of some of its properties was gained by Europeans through the enterprise of the famous discoverer Columbus. In 1492, when the ships of Columbus were lying off Cuba, two sailors landed to explore the island, and on their return they reported, among other wonderful things, that it was a custom of the natives to puff smoke from their mouths and nose. Tobacco, however, was not introduced to the Old World until nearly a century afterwards. The introduction of the practice of smoking into this country is generally attributed to Sir Walter Raleigh, who certainly made it fashionable, and gave it a good standing in society, so that in a short time to smoke “with a grace” was looked upon as a necessary accomplishment of a gentleman. Among the uninitiated it was a practice which excited wonder and sometimes alarm. On one occasion when Sir

Walter Raleigh was taking a "private pipe," a servant entered his room, and seeing the smoke proceeding from his master, concluded that he was on fire, and thereupon threw the contents of a jug of ale over his face to extinguish the conflagration.

allowance on the other for waste, this amounts to about half an ounce per week for every male of smokable age throughout the United Kingdom. This seems a very moderate allowance, but then we must remember that a great many men even now



FLOWER OF THE TOBACCO PLANT.

The annual consumption of tobacco has of late years greatly increased. In 1841 we consumed less than fourteen ounces per head; since then the proportion has steadily increased, and in 1876 we consumed twenty-three and a half ounces. Deducting, on the one hand, women and children, and making

are non-smokers. When we note how the tobacconists' shops have increased in numbers and in significance since 1841, and the hosts of persons smoking in the streets or in public conveyances (out-door smoking was then a rarity), we are surprised to find that the men of 1841 consumed per head

as much as seven-twelfths of our present average. But we must remember that there were in 1841 an army of inveterate snuff-takers—and snuff runs away with a great deal of tobacco—whose ranks have been sadly thinned since that date; and also that there was at that time a considerable amount of steady, solemn smoking of long pipes at taverns and private houses during the evenings.

Indulgence in tobacco includes not only smoking, but the snuffing and chewing of that substance. Snuffing and chewing are not such common habits as smoking; both, however, produce the same effects as smoking, although snuffing does it to a much less degree and chewing to a greater.

Tobacco is purely a luxury (although habit may make it, like other poisons, a necessity, such as De Quincey found opium), and it has no claim to a place among articles of diet, since it contributes nothing physically to the well-being of the body. By its sedative and calming effect upon the mind and nervous system generally it is no doubt sometimes useful, but most people are better off without it, and to a considerable number it proves positively and quickly injurious. If the principle upon which a burnt child dreads the fire ever becomes generally applicable to boys and young men who smoke one or two strong cigars as an experiment, tobacco manufacture will be a much less lucrative occupation than it is at present.

Tobacco, Anecdote respecting.

—In 1616 a Derbyshire gentleman, named Peter Campbell, made his will, bequeathing to his eldest son all the household goods towards housekeeping, on the condition that if hereafter any of his brothers or sisters should find him smoking tobacco, he or she so finding him should become entitled to the said goods, or the full value of them in money. The spirit of opposition to the use of tobacco has seldom been evinced so strongly.

Tobacco, Composition of.—The composition of dried tobacco-leaves varies
M. D.

considerably with the conditions under which they are grown: of course it depends also on the sort of plant grown. The mineral matter is considerable—thirteen to twenty-eight per cent.—and it includes much nitre. The presence of the nitre gives the dry leaf its peculiar property of slowly smouldering away with slight deflagrations, like tinder. The leading principle or constituent, however, of tobacco is the nicotine, a nitrogenous substance of the group of the alkaloids. This nicotine exerts a very powerful influence on the nervous system, being a narcotic, like the morphine, narcotine, etc., met with in opium. Some of the more delicate tobaccos of Havannah contain less than two per cent. of nicotine; the stronger tobaccos, Virginian shag for example, contain six per cent. Even ten per cent. has been discovered in some samples grown in Europe. When the tobacco is consumed in the course of smoking, the nicotine is in great part destroyed, other volatile alkaloids (picotine, etc.) being produced from it. These are contained in the smoke, are liquid, like nicotine, and are also poisonous. The amount of water existing in commercial tobacco is on an average thirteen per cent.

Tobacco, Preparation of.—Tobacco is prepared for use by drying, fermentation and other processes, and these processes alter very much its natural character and flavour. Sometimes various “liquors” and “spices” or “pickles” are employed in the treatment of the leaves, different flavours being in this way developed. Snuff is chiefly prepared from the stalks and ribs of the tobacco-leaf.

Tobacco, Effects of.—Tobacco has widely opposite effects with different individuals. Some it fattens; for some it causes dyspepsia and constipation; for others it relieves dyspeptic symptoms and relaxes the bowels; for some it produces sleep, for others wakefulness; some temperaments it arouses to intellectual brilliancy, others it muddles and stupefies; on many its effects are to calm, to soothe, and to produce a

sweet and mild oblivion, on others it brings all the horrors of extreme and painful nervousness. Some like a smoke before going to battle, to brace their strength and courage to unusual effort: others like it after the battle, to calm their nerves and soothe them to slumber.

The effects of a sudden breaking-off of the habit of using tobacco vary remarkably in different individuals. Some at once improve in health, increase in flesh and strength; others deteriorate, becoming thin and weak.

Tobacco Harmful.—Professor T. R. Fraser thus sums up the case against tobacco in "Health Lectures for the People":—

"Excessive smoking and even occasional immoderation are hurtful to the nervous system, the circulation, the respiration, the digestion, the eyes, and the nutrition of the body."

"Injury to the nervous system is shown by the production of headache, sleeplessness, depression of spirits, and want of steadiness, along with tremors in the arms and legs.

"Injury to the circulation is shown by the production of palpitation, giddiness, and irregularity and weakness of the pulse.

"Injury to the respiration is shown by the production of breathlessness, bad wind, and smoker's sore throat.

"Injury to the digestion is shown by the production of loss of appetite, heartburn, sickness, and a foul tongue.

"Injury to the eyes is shown by the production of sore and inflamed eyes, and sometimes by blindness.

"Injury to the nutrition of the body is shown by the production of paleness or sallowness of the face, and a bad quality of the blood, which is called anæmia.

"All these bad effects are intensified when the smoking takes place in a confined room, or in a railway carriage, in which several persons are smoking. The air then becomes very rapidly impure; and further, each smoker breathes in some of the smoke from the pipes or cigars of his companions

in addition to what he breathes in from his own pipe or cigar."

Tobacco, Sustaining Power of.

—The power of tobacco to sustain the system, to keep up nutrition, to maintain and to increase the weight, to brace against severe exertion, and to replace ordinary food, is a matter of daily and hourly demonstration. Convalescents from fever have been known to be supported for long periods very largely by their quid or pipe. Soldiers and sailors in war times have relished their tobacco rations more highly than anything else. There are thousands, too, who in mines requiring great exertion, forego their meals and increase their pipes or their chews.

Tobacco, Use and Abuse of.—

That a substance possessing such powers for evil should, in spite of them, be so largely used by man, seems to prove that there is in it some peculiar virtue fitting the needs of the race. What, however, is the difference between the man and the woman, that one should and the other should not crave or need the drug? A female cynic would say that the distinction rests in the superior selfishness of the lord of creation, who is unwilling that his lady's boudoir, much less her person, should reek of that odour which he himself bears about with him. But we believe that, although selfishness is operative, there is a deeper cause for the prevailing difference. There is much reason for believing that tobacco lessens the waste of nervous tissue, enabling it to perform its labour with less friction, so to speak, than would otherwise be the case. Be this true or not, it is probable that the tobacco habit is in great measure psychological, and it is plain how this psychological cause is more powerful in the man than in the woman. In the busy mart of the city, in the fatigues and excitements of a military campaign, in the exposure of a hunter's or a sailor's life—wherever men strive and endure—the nervous system craves something that, after the day's worry and battle, shall

soothe it into quiet. The life of the average woman is much more tranquil and uniform than that of the man, and her work is never so active and intermittent as is his; her day's strife is not so fierce, though it may never be finished.

These may seem useless speculations, but they really serve to indicate what seems to us the proper use of tobacco by the brain-worker, namely, that its employment should be restricted to the hours of rest and calm; that it should be used to soothe the nervous system and help it to settle into the state of quiet in which it recuperates its powers. The more sedentary and the freer from emotional or other excitement is the life of the brain-worker, the less excuse is there for the use of the narcotic. Moderation in the use of tobacco is almost as necessary to the brain-worker as moderation in the use of alcohol. It is certain that very frequently nervous breakdowns are hurried in their development by the constant employment of the drug.

The manifestations of the excessive use of tobacco are not always uniform, but in the great majority of cases they consist of evidences of excessive nervous irritability, especially affecting the heart. Minor ills, such as chronic sore throat, dyspepsia, etc., are not rare, but the serious symptoms which demand attention are usually connected with the heart. Cardiac distress and palpitations, irregular intermittent pulse—these, in minor and major degrees, are nearly always present when tobacco has played an important part in the production of a nervous breakdown. It should never be forgotten that the sedentary brain-worker bears tobacco much worse than does he who leads an active outdoor life; and also that the same individual, during his periods of active outdoor exertion, resists the deleterious effects of tobacco much more strongly than he does when a desk-student. More than this, not only do habits of life, but also individual and race peculiarities, affect the tolerance of tobacco. Idiosyncrasies, *i.e.*, individual peculiarities, must be studied in the individual; but peculiarities of classes

or races of people, *i.e.*, temperaments, may be studied as general principles. It may, therefore, be laid down as a law, that nervous temperaments badly withstand the deleterious effects of large amounts of tobacco. The phlegmatic Teutonic student lives in an atmosphere of tobacco-smoke which would be utterly detrimental to his more nervous Oxford or Cambridge *confrère*.

It is evident that, as with alcohol, so with tobacco. No fixed rule can be properly enunciated as to the daily amount to be used. We have seen a large number of cases in which tobacco has evidently been very potent for evil; and our experience seems to warrant our stating that very frequently, if not usually, in the nervous Englishman, who works hard with his brain and takes but little exercise, more than two mild cigars a day is injurious; and that it is best to take the "smoke" after dinner during the hours of rest.

Tobacco Workers.—With regard to workers in tobacco, it is stated by a reliable authority that they have very small families: quite the reverse of what is usually the case with working people. He found only four hundred and sixty-five children in three hundred and twenty-three families. It is not certain what the cause of this peculiar condition may be; but it is quite probably due in large measure to a premature commencement of work, and to an influence which tobacco has in checking the sexual development of young girls.

Tomatoes (*Portuguese tomato*, from Indian name).—Ripe tomatoes, which have an agreeable acidulous taste, are used in sauce, and in other ways with cooked meat. Unripe tomatoes make a good pickle.

The plant which bears the tomato is a native of South America. The tomato fruit is about the size of a small potato, and is chiefly used in soups, sauces, and gravies. It is sometimes served at table roasted or boiled, and, when green, makes a good ketchup or pickle.

Tongue, The (*A.-S.* *tunge*; *Lat.* *lingua*, tongue).—The tongue is composed of muscular fibres running through it in different directions, mingled with a considerable amount of cellular and fatty matter. It is abundantly supplied with vessels and nerves. In the centre the tongue is divided by a depressed line, known as the “*raphé*.” It is covered by a dense mucous membrane, continuous with that of the mouth, on which there are numerous “*papillæ*,” small towards the tip, but becoming much enlarged towards the base.



UPPER SURFACE OF THE TONGUE.

The above illustration shows the upper surface of the tongue, with the tonsils and fauces, and exhibits both the circumvallate papillæ and the foramen cæcum, or blind opening. Between these and near the foramen cæcum lie the lingual glands. The small rounded eminences which are seen scattered about over the fore part of the dorsum of the tongue are the fungiform papillæ. The fungiform papillæ are intermediate in size between the circumvallate papillæ and the filiform, which are the smallest and most numerous.

The tongue may be described as a muscular body lying on the floor of the mouth within the lower dental arch. It is covered by mucous membrane beneath which are mucous glands having orifices opening upon its surface. It is the organ of the special sense of taste, and presides over the processes of mastication and swallowing. The exquisite sensibilities of touch and taste residing in the tongue are important aids in mastication. Its sense of taste informs us of the qualities of the food, and its sense of touch recognises its physical condition—consistency, size, form, and when it has been sufficiently masticated. By its muscular structure it collects and moves the food from one side of the mouth to the other, and, with the aid of the lips and cheeks, keeps it between the masticating surfaces of the teeth. When the food is in a sufficiently softened condition, the tongue collects it upon its upper surface and passes it backward into the pharynx—a funnel-shaped canal situated on the middle line in front of the spinal column, between the base of the skull and the œsophagus or gullet—which serves as a common origin for the digestive and respiratory tracts, giving passage to the air during respiration and to the food at the time of deglutition or swallowing. By virtue of its complicated muscular structure the tongue is also capable of the great variety of movements essential to suction and to speech.

Tongue and System, Sympathy Between.—The tongue sympathizes with all derangements of the general system—especially with those of the alimentary canal. As an index of the state of the general system, it affords, doubtless, more varied information than any other single means of judgment. Its bulk, colour, dryness, or moisture; the character of its surface, of its coatings, and of its movements, show to the skilled observer the degree, progress, and stage of systemic derangement.

Tongues Used as Food.—Bullocks' tongues, sheep's tongues, and rein-

deer tongues are commonly used as food, and are nutritious and digestible. Some tongues are imported in a dry condition; these need long soaking in cold water before being used.

Tonic Draught.—*See* DRAUGHTS.

Tonic Infusions, Bitter.—*See* INFUSIONS.

Tonic Mixture.—*See* MIXTURES.

Tonic Mixture for Indigestion.
—*See* MIXTURES.

Tonic Pills.—*See* PILLS.

Tonics (*Lat.* *tonus*; *Gr.* *tonos*, stretching; from *teino*, I stretch).—Tonics, also called corroborants, are medicines which increase the tone of the muscular fibre, and whose continued administration give strength to the body. Tonics, to a certain extent, are stimulants, inasmuch as they rouse the vital energies, but the incitement is slowly produced and is permanent. There are no remedies which require greater discrimination in their administration than tonics. As a general rule, they ought not to be given in ardent fever when the pulse is hard, the stomach irritable, and the tongue foul. The diseases in which they are appropriate are evidently those of deficient power.

Tonsil.—*See* SOFT PALATE.

Tonsils, Enlarged (*Lat.* *tonsillæ*; from *tonsillis*, shorn; from *tondeo*, I shear or clip).—One form of chronic sore throat consists mainly in a permanent enlargement of the tonsils. It is most frequent in children and young adults, and it rarely occurs after the thirtieth year. Sometimes it is congenital, or at least noticed very shortly after birth. It usually occurs in individuals whose constitutions are imperfect from scrofula or other hereditary taint, or have become impaired from acute or chronic disease, followed by impoverishment of the blood, as it is termed.

The enlargement varies from the merest increase of volume to a size as large as walnuts, the two tonsils touching each other and pushing the palate forward. They are likewise apt to be enlarged upward and downward. The condition is readily recognised on inspection of the throat through the open mouth, and the extent may be determined by following the outline of the gland beyond sight with the finger. The tonsils are often diseased, and adherents to the folds of the palate.

Tonsils, Enlarged, Symptoms of.—The symptoms are impairment of articulation, attended in some cases with impairment of respiration and swallowing. The mouth is often kept habitually open; the throat is dry from rapid evaporation of its moisture; there is snoring in sleep, and the voice has a nasal twang. The necessity sometimes existing for bending the head forward, or toward the side least affected, in order to breathe effectually, may give rise even to permanent deformity of the chest walls. The impairment of respiration leads to insufficient oxygenation of the blood, and eventually ill health. In extreme cases, suffocation is at times imminent, and death may occur rather suddenly from this cause.

Tonsils, Enlarged, Treatment of.—The treatment of enlarged tonsils is both constitutional and local. In cases of moderate severity, and of recent standing, constitutional treatment alone may be adequate to a cure. In most instances local treatment is necessary; in very many it becomes absolutely requisite to remove a considerable portion of the diseased glands by surgical interference—a perfectly safe and advisable procedure.

Tooth.—A tooth consists of *enamel*, *cementum*, *dentine*, and *dental pulp*. The exposed part—that above the gum—is called the *crown*; that which is held within the socket, the *root*; and the narrow part between the crown and the root, the *neck*.

Figs. 1 and 2 represent a central incisor and a molar, split vertically, so as to show their various parts. A is the cutting edge

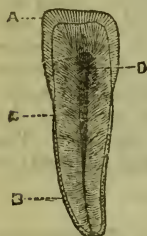


FIG. 1.

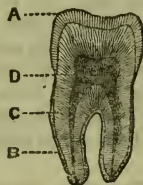


FIG. 2.

or grinding surface, covered, as is the entire crown, with enamel; B, the cementum covering the roots; C, the dentine; D, the pulp cavity. Fig. 3 shows a transverse sec-



FIG. 3.

tion of a molar of natural size, in which 1 is the dentine; 2, the enamel; 3, the pulp cavity.

Toothache.—Pain or discomfort in or about a tooth may arise from a variety of causes. In perfectly sound teeth rheumatism sometimes causes distressing pain, which may be located in one or two teeth or involve half the jaw, or even the entire jaw. Neuralgia originating, as it does very frequently, in diseased teeth, may have its origin elsewhere, and manifest itself in teeth which are perfectly sound. Valuable teeth are often sacrificed from this cause. Pain is frequently experienced in a tooth which is only sympathetically affected.

A recession of the gums and alveolar processes from about the neck of a tooth, exposing the cementine, gives rise in some cases to a dull and annoying ache. Particles of

tartar which have found their way between the gum and the alveolar process may occasion soreness and distress, if not acute pain. The disease known as *exostosis*, which may be described as an unnatural enlargement of the root of the tooth, is often the cause of constant uneasiness, and sometimes of distressing pain.

In some cases there is a peculiar deposit in the pulp of the tooth of granules of bone-like material which causes severe neuralgic, generally paroxysmal, pain, sometimes located in the tooth (which yet gives no evidence of trouble either by soreness, discoloration, or decay) and sometimes reflected to the eye, ear, scalp, or elsewhere.

The death of the pulp in a tooth—the result of a fall, blow, or other accidental or voluntary violence, or from some unexplained cause—becomes the occasion of unbearable pain when the products of its decomposition are confined in the pulp cavity. Some teeth, in which a cavity of decay has exposed the dentine, become exceedingly sensitive to the influence of irritating agents. In such cases, sweets or acids taken into the mouth, or hot or cold drinks, or even the secretions of the mouth, will occasion pain.

Chief in frequency, however, of the causes of pain in a tooth is the absolute or approximate expanse of the pulp which is located in a cavity having the general form of the tooth, and protected on all sides by its walls. When by the agency of decay the overlying floor of the cavity becomes so thin as to be permeable, the result is an irritation of the delicate and exquisitely organized pulp, and consequent acute pain. When the protecting wall of dentine has been so far disintegrated as to expose the pulp, the latter is liable to constant irritation by contact with food or drinks, with the secretions of the mouth, or even with the atmospheric air. A small defect in the continuity of the dentine is likely to result in greater distress than would ensue from a complete exposure, for the reason that in the latter case the swollen pulp has room for its enlargement, while, in the former, the unyielding walls of

the tooth confine it. The pressure makes manifest every pulsation of the heart, causing that form of anguish known as the jumping toothache. Those who have experienced this pain need no description of it; those who have not would do well to avoid a practical acquaintance with it.

Still another form of pain in connection with teeth is that which is occasioned by an inflammation of the membrane surrounding the roots and investing the sockets. This affection is known by the name of *periodontitis*—inflammation about a tooth. The condition may be either acute or chronic, and may be the result of the continued influence of neuralgic gout, or rheumatism; of the irritation of deposits of tartar between a tooth and its socket; of mercurial poisoning, or of one of the eruptive fevers (measles, scarlet-fever, small-pox, etc.); of an attack of scurvy; of degenerative changes from age or other causes, either in the membrane itself or in the roots of the teeth, or of false (premature) occlusion of a tooth in mastication.

Toothache, Acute Form of.—

The acute or active form may be the result of "a cold settling in the jaws," as it is commonly expressed, and generally subsides after a few hours or days of discomfort. The most common and the most severe form of periodontitis, however, is that which is associated with disease or death of the pulp in a tooth. Teeth in which an unsuccessful attempt has been made to save an exposed pulp by "capping," as well as those in which the pulp has been devitalized but its complete removal not accomplished, are liable to periodontitis, especially during sudden changes in the weather, or as a result of a disturbance of health in the individual. Periodontitis usually commences with a scarcely noticeable uneasiness in the tooth, but deepens into a dull, heavy, sometimes throbbing persistent pain. From the swelling of its investing membrane, the tooth projects beyond its fellows, compelling a discontinuance of all masticatory efforts for the time being. The pain increases in

intensity, and is accompanied by more or less swelling of the face. Unless the diseased action be arrested by treatment, an abscess forms at the root of the tooth, the resulting pus generally finding its way to the surface of the gum opposite the abscess, or at some other point in the mouth, forming what is popularly known as "gum-boil." After the discharge of the pus the pain subsides, and the swelling gradually disappears. But the disease is not cured, and after a longer or shorter period, depending on various circumstances—notably on the good or the ill health of the individual—there will be a recurrence of the abscess. If this is repeated often, the bony socket of the tooth becomes affected, the sockets of adjoining teeth participate in the trouble, the teeth lose their vitality and drop out, and sometimes necrosis (death) of a portion of the jaw follows. Sometimes the pus, instead of finding exit near the affected tooth, burrows among the tissues, and makes an outlet (called a "sinus") for itself at a distant point inside or outside the mouth, not unfrequently producing disfiguring scars on the face. When the symptoms indicate periodontitis, treatment should be instituted with a view to prevent the formation of an abscess, or, if this effort fails, to influence it to open at a desirable point—inside of the mouth, and not upon the face. Domestic treatment of this affection is usually wrongly directed, and that prescribed by the average general practitioner of medicine is almost equally at fault. The best possible advice which can be given here is to consult an intelligent practitioner of dentistry at an early stage of the trouble, at which time it can frequently be aborted.

Toothache in Pregnancy.—

A frequent accompaniment of pregnancy, and one which gives rise to considerable pain and annoyance, is toothache. It is not so much real toothache, as a rule, from which the patient suffers, as a kind of neuralgia depending upon an irritable condition of the nerves of the teeth, these nerves sharing in the general irritability of

the whole system. It may, however, be dependent upon a decayed state of the teeth themselves.

Toothache, Relief of.—For the relief of toothache from approximate or actual exposure of the pulp, an application to the cavity of decay of a little ball of cotton saturated with oil of cloves, oil of peppermint, or phénol sodique in full strength, is perhaps the best amateur treatment when the cavity is easily reached. In other cases, holding in the mouth phénol sodique diluted with from three to six times its bulk of water, will frequently alleviate the pain. But it must be remembered that, if the pulp is nearly or quite exposed, a recurrence of the pain is probable at any moment. For permanent relief the only efficient plan is to secure the services of a dentist.

In the case of a child suffering from toothache in a temporary tooth, the difficulty of applying local sedatives directly to the cavity of decay is vastly increased by the fear (often well founded) that the affection will be aggravated by the lack of skill in the amateur operator, and by the exceeding amount of the salivary secretion, making it difficult even for an expert to operate satisfactorily. The disinclination to have in the mouth anything which tastes or smells unpleasant, or which produces any disagreeable sensation upon the mucous membrane, is a difficulty in the way of using such remedies as have been suggested. In these cases holding warm milk, or even warm water, in the mouth will frequently give temporary relief.

Tooth Brushes, Selection of.—

See HYGIENE OF THE MOUTH.

Tooth-drawing, Bleeding after.

—The bleeding which follows the extraction of a tooth is usually of short duration, and ceases without requiring any attention. In very exceptional cases, it may be so profuse and long continued as to demand treatment. The anxiety of the patient to have

it cease leads sometimes to such constant interference as to effectually prevent natural cessation by the clot which would otherwise form in the socket. The first injunction, therefore, in such cases is, *Do not disturb the clot*. If, in spite of such negative attention, the bleeding continues, resort may be had to the application of astringents or styptics, such as alum, tannin, catechu, kino, phénol sodique, or remedies which act mechanically, such as powdered resin, burnt cork, spider's web, etc. Of the various astringents, tannin is perhaps the most efficacious. Either that or powdered alum may be applied to the socket of the tooth on a small pellet of cotton.

If these remedies are not available, cobweb, which can generally be procured without much difficulty, may be rolled into a small pellet or ball, and carried into the bleeding socket by a match-stick. If the case be a stubborn one, and refuses to yield to such appliances, pressure may be added. The little pledget of cotton carrying the tannin or other styptic should be dropped into the socket, which may then be compressed by a V-shaped saddle (made of cork or wood), so as to clamp the margins of the gum, and be held in place by the opposing teeth or jaws, assisted, if need be, by a bandage holding the jaws together. To divert the circulation to other parts of the body, hot foot-baths may be resorted to; and a sitting instead of a recumbent position assumed, that the law of gravitation may also conduce to the desired result.

In exceptionally extreme cases, when such measures as have been indicated fail, further treatment should be instituted by the dentist or physician, and should include systematic medication.

Toothpick, Use of.—See HYGIENE OF THE MOUTH.

Touch, Phenomena of.—See PHENOMENA OF TOUCH.

Touch, Sense of.—The organ of this sense is really co-extensive with the

whole surface of the body. The sense of touch appears to exist only in four classes of animals—in most mammalia, in a few birds, in serpents, and probably in insects; and although all animals may possess that feeling which makes them sensible to the impressions of warmth and cold, very few possess, like the human subject, organs exclusively appropriated to the sense of touch, and expressly constructed for the purpose of feeling, examining, and exploring the qualities of external objects.

The sense of touch is the sensibility of the nerves of the skin to mechanical resistance, and is especially manifested in the tips of the fingers. The special organs of touch are the papillæ, which we mentioned when speaking of the skin. There is no sense which is so capable of improvement as that of touch. Of this power of improving the delicacy of touch, says Dr. Carpenter, "we have examples in the case of certain artisans, whose employments require them to cultivate their tactile discrimination; thus the female silk-throwsters of Bengal are said to be able to distinguish by the touch alone twenty different degrees of fineness in the unwound cocoons, which are sorted accordingly; and the Indian muslin-weaver contrives by the delicacy of his touch to make the finest cambric in a loom of such simple construction that European fingers could at best propose to make a piece of canvas at it."

Touch, Sense of, in Blind.—*See* BLIND, SENSE OF TOUCH IN.

Tous-les-mois (*Fr.* meaning "All the months," implying food that may be eaten all the year round).—This substance, which in reality is arrowroot under another name, may be prepared in the same manner as arrowroot, over which it has no advantage. They both contain little nourishment.

Trance.—*See* CATALEPSY.

Tranquillity (*Lat.* *tranquillus*, calm, quiet).—Tranquillity in the sick-room, it need hardly be said, is most essential to speedy recovery, and neglect to insure it to

a patient will retard progress, throw him back, and so prove injurious to him; and yet how often in the course of a disease has the poor sufferer to pass a restless and wakeful night from want of attention in regard to this matter. If a patient has fallen asleep, and you shortly after wake him by the slamming of a door, or the overturning of some article of furniture, the chances are that sleep will forsake him, that his pain will be aggravated, and that after passing a troubled night he will be found in the morning feverish and unrefreshed. These things demand earnest attention from those who are in attendance upon the sick; and while to those in health they may appear insignificant, they are weighty matters in the treatment of disease.

Transmission of Impressions by Nerves, Velocity of.—*See* VELOCITY OF TRANSMISSION OF IMPRESSIONS BY NERVES.

Trapping Drain.—*See* DRAINS AND DRAINAGE.

Treatment, General, of Mental Disorders.—*See* MENTAL DISORDERS, GENERAL TREATMENT OF.

Treatment of Disease, Changes in.—*See* DISEASE, CHANGES IN TREATMENT OF.

Trichina Spiralis (*Gr.* *trichinos*, made of hair; from *trix*, *trichos*, hair; *Lat.* *spiralis*, from *Gr.* *speira*, coil, spire).—Among our parasitic enemies, the *trichina spiralis*, or pork worm, is possessed of great power for evil to the human family. In spite of all the remedies yet tried for the malady which it produces in man, a large number of the cases prove fatal, and even those who recover do so after weeks or perhaps months of suffering.

The history of our knowledge respecting the trichina worm is an excellent example of how microscopical investigation of disease has been of immense benefit to humanity.

Previous to the investigation of Dr. Zenker, of Dresden, in 1860, cases of trichinous disease were supposed to be unusual forms of typhoid fever and of inflammatory rheumatism, or when connected, as they sometimes were, if they occurred in whole families at once, with the eating of pork, were attributed to some peculiar poisonous putrefaction of the meat. The Dresden microscopist, however, discovered that the painful symptoms and terrible mortality of this puzzling complaint were due to the infection of the patients with the young trichina worms, which, hatched out in the intestines of the unfortunate people who eat diseased pork, burrow their way through the muscles to all parts of the body, and by their irritation they set up, as so many millions of little moving splinters in the flesh, cause the suffering and death so common in this malady. Their number is sometimes very great, and with them, indeed, as with most of the parasites which infest us, nature appears to have done her best to compensate for their wonderful minuteness by rendering them terrible through their almost infinite number. Thus, it has been found that a cubic inch of pork may contain nearly a hundred thousand trichina, and Dr. Thudicum calculated that there were twenty-eight millions of young worms in the muscles of a patient he examined.

The trichina disease comes on generally with violent vomiting and diarrhoea, followed by high fever, with severe pains in the limbs, back, and head. For some time it can scarcely be distinguished from acute poisoning, or sometimes from typhoid fever; but about the seventh or eighth day of the disease, a peculiar dropsical swelling of the eyelids and root of the nose appears and indicates the true nature of the malady.

The trichina worm is very hard to kill, and withstands salting and smoking of the pork in which it exists without difficulty. All pork should, therefore, be carefully examined with a microscope before it is exposed for sale, and, as an additional precaution, it should never be eaten without thorough cooking. Even a very minute

fragment of the innermost part of a ham which escapes being heated nearly to the boiling-point of water, may convey several living trichina into the stomach of a person who eats it, and give rise to this painful, often fatal, disease.

Trichina worms are chiefly found in pork, but are also met with in the flesh of rabbits, cats, rats, and mice.

Tripe.—Tripe, which is the cleaned paunch or first portion of the ruminant stomach of the ox, contains 13 per cent. of albumen and 16 per cent. of fat. It is easy of digestion, but a poor dependence for a meal.

Tripe, How to Cook.—Boil some onions in two waters, and partially boil a sufficient quantity of tripe. Then boil both together slowly till the tripe is soft and tender. Add salt and a few grains of cayenne pepper. As tripe is easily digested, it forms a very suitable dish for a convalescent.

Trout.—Of trout there are a great variety, but the salmon trout is the best, being soft and gelatinous, and at the same time somewhat stimulant and alkaliescent. All trout, indeed, are a very putrescent food, and therefore easy of digestion. They should be eaten in their freshest state, and taken if possible from running water. They are best in summer, for then they are in best condition and their flavour most delicate.

True Elixir Vitæ, The.—See ELIXIR VITÆ, THE TRUE.

True Ribs.—The seven uppermost ribs, so called because each of them is connected directly with the *sternum*, or breast-bone by means of a separate cartilage.—See RIBS.

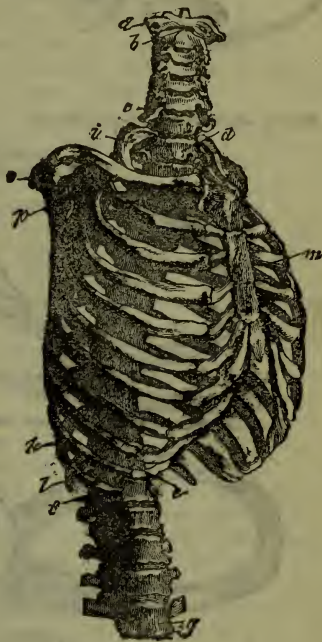
Truffle (*Old Fr. truffe*; from *Lat. tuber*, a bulbous-like root; from *tumeo*, I swell).—The common truffle is the *Tuber cibarium* of science, and belongs to that

numerous class of esculent fungi distinguished from other vegetables not only by the singularity of their forms, but by their chemical composition. Upon analysis they are found not only to contain the usual components of the vegetable kingdom, such as carbon, oxygen, and hydrogen, but likewise a large proportion of nitrogen; from which they approach more nearly to the nature of animal flesh. It was long ago observed by Dr. Darwin that all the mushrooms cooked at our tables, as well as those used for ketchup, possessed an animal flavour; and soup enriched by mushrooms only has sometimes been supposed to contain meat.

The truffle belongs to the family of the mushroom. It is certain that the truffle must possess, equally with other plants, organs of reproduction; yet, notwithstanding all the efforts of art and science, it has been impossible to subject it to a regular culture. Truffles grow at a considerable depth under the earth, never appearing on the surface. They are found in many parts of France; those of Périgord and Magny are the most esteemed for their odour. There are three varieties of the species—the black, the red, and the white: the latter are of little value. The red are very rare, and their use is restricted. The black has the highest repute, and its consumption is enormous. When the peasantry go to gather truffles, they take a pig with them to scent out the spot where they grow. When that is found, the pig turns up the surface with his snout, and the men then dig until they find the truffles. Good truffles are easily distinguished by their agreeable perfume; they should be light in proportion to their size, and elastic when pressed by the finger. To have them in perfection they should be quite fresh, as their aroma is considerably diminished by any conserving process. Truffles are stimulating and heating. Weak stomachs digest them with difficulty. Some of the culinary uses to which they are subjected render them more digestible; but they should always be eaten sparingly. Their chief use is in seasoning and garni-

tures. In short, a professor has said, "Meats with truffles are the most distinguished dishes that opulence can offer to the epicure."

Trunk, Bones of the.—The trunk is shown in the accompanying illustration, in which *a* is the atlas vertebra; *b*, the axis vertebra; *c*, the seventh or last cervical



THE TRUNK.

vertebra; *d*, the first dorsal vertebra; *e*, the last dorsal vertebra; *f*, the first lumbar vertebra; *g*, the last lumbar vertebra; *h*, the sternum or breast-bone; *i*, the first rib; *k*, the eleventh rib; *l*, the twelfth or last rib; *m*, the costal cartilages; *n*, the clavicle or collar-bone; *o*, the acromion process of the scapula; *p*, the glenoid cavity of the scapula for articulation with the head of the humerus.

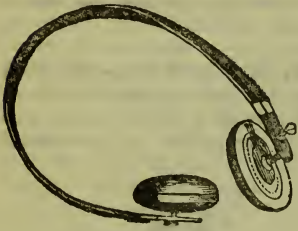


FIG. 5.—SALMON AND ODY'S TRUSS.

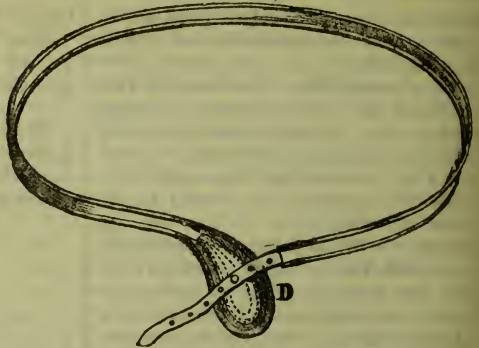


FIG. 1.—SINGLE-HEADED TRUSS, CIRCULAR.



FIG. 2.—SINGLE-HEADED TRUSS, FOR THE TREATMENT OF RIGHT-SIDED HERNIA.



FIG. 3.—DOUBLE-HEADED TRUSS.



FIG. 4.—SINGLE-HEADED TRUSS.

Truss (*Fr. trousse*, bundle ; from *trousser*, to tie together).—A truss consists of a ring of steel, to the extremities of which are attached pads, one of which presses upon the aperture and retains the hernia within the abdominal cavity. There are many forms of trusses, but the measurements to be taken in writing for any form recommended are the same : thus, if an inguinal or femoral truss be required, the circumference of the body at the hips should be stated, midway between the spine of the ilium and the trochanter. In “Coles’s Truss” there is a spiral spring acting on the pad ; the “Moemain Lever Truss” dispenses with the usual circular spring, and the pressure upon the rupture is gained by a strap passing under the thigh and acting on a spring lever attached to the pad. Salmon and Ody’s “Self-adjusting Truss” has a pad revolving on a ball and socket. The best form of truss, however, in modern use, is Wood’s. In this truss a flat and level pressure is applied at the sides of the hernial opening, instead of at the axis. The part of the skin upon which the pad presses should be regularly washed and bathed with Eau de Cologne or spirit, or dusted with violet powder or Fuller’s earth. In children an indiarubber band and pad answers generally. Various forms of trusses are shown in figs. 1, 2, 3, 4 and 5.

On the subject of trusses a few remarks may be added. If a hernial protrusion occurs in either sex, mechanical treatment should be adopted at once, for no matter whether in infancy, youth, or middle age, judiciously applied trusses frequently effect a cure without further surgical interference, and at all events cause but little trouble or annoyance. A surgeon should always be consulted as to the form of truss needed, and should himself take the necessary measurements, and himself apply the apparatus in the first instance. It is a great mistake, and one productive of the worst results, to leave the advice of a truss to an instrument maker, and we often see instances, especially among the poor, of ill-

fitting, ill-shaped, contrivances, which not only do no good at all, but in many cases do absolute harm, by increasing the mischief they are designed to alleviate.

Trusses, Hints on.—The following hints on trusses are of value, as the experience of an authority on the matter :—
“In the majority of cases, the circular spring truss is the best form. The curve of the spring and the relative position of the pad with it should be appropriate to the configuration of the wearer. A single piece of metal should form the spring and foundation of the pad. As far as practicable the spring of the truss should pass around the bony rim of the pelvis, fitting closely to the figure, and should lie out of the region of the great muscles of the buttock (*glutei*). The form of the spring may be designed after the French model or the German. The former resembles the coil of a watch-spring, and is very elastic and clinging ; the latter almost exactly fits the outline of the body in its state of repose ; it is almost inelastic, and very hard. The French is always pressing inwards, even when the wearer is at rest ; the German scarcely presses at all when the abdomen is soft, but resists with power when any expulsive force makes the abdomen swell. The best shape for the spring is one which forms a medium between the two. The pad should be of moderate dimensions. For the adult it should not exceed two and a half inches in length and two inches at the widest part. Its superior edge should follow the upper line of the spring, which falls a little from the shoulder or bend, where it lies in contact with the hip. The inner surface should be directed slightly upwards. The proper shape for the pad, and the materials of which it should be constructed, may be varied to accommodate particular cases. The wearer generally discovers after awhile which kind of pad is most free from annoyance ; that pad, however, is the best which maintains perfect and unintermitting retention of the hernia. Every pad should have attached to it two

studs, one near its junction with the spring, and another at its lowest point. To the upper one the transverse strap, passing from the free end of the spring, is attached; the lower stud is used with the thigh strap, which should be always worn. It is loosely fastened on to the spring of the truss near its shoulder, and should fall along the hollow beneath the buttock. In the erect posture of the wearer this strap should be moderately tight; it prevents the pad from shifting, and should never be discarded. The pad may be prevented from fretting the skin by covering it with fur, or by the interposition of some soft substance."

Tunny.—This is a small fish of the turbot kind. It is much esteemed as a delicate fish, and forms a favourite article at table. In its general qualities it is similar to other fish of a white fibre, being easily digested by the stomach if attention is paid to the dressing, not to overload it with oily matters, or to make the sauce too rich, the great fault in every fish in diet. This fish, like many others, is only procured at a certain time of the year, and therefore does not form a regular or constant article of food.

Turbid Water, Purification of (*Lat. turbidus*, disturbed; from *turba*, crowd).—Turbid water is, in some way as yet insufficiently explained, made clear by the Indian plan of putting a piece of alum into it. The alum appears to unite with the mud, and to form a clayey deposit. Independently of this action, it has an astringent effect upon organic matters: it hardens them, and they subside to the bottom of the vessel, instead of being diffused in a glairy, viscous state throughout the water. No taste of alum remains in the water, unless it has been used in great excess. Three thimblefuls of alum will clarify a bucketful of turbid water.

Turbot.—Turbot is an excellent article of food, but it is usually rendered difficult of digestion by the quantity of lobster or oyster sauce with which it is eaten.

Turkey (so called because supposed to have come from Turkey).—The turkey very much resembles the guinea-fowl, though it is somewhat denser in its fibre, and consequently less soluble and more alkaliescent. Like all poultry, it is generally sent to table roasted or boiled, but when old it is better stewed. It was originally a native of Africa, but has been reared with great advantage in this country. The Norfolk turkeys are often brought to a prodigious size; like the guinea-fowls, when roasted, they are generally filled with stuffing which is liable to considerable objection.

Turmeric (*Fr. terre-mérite*, earth of value).—This is used to form one of the leading ingredients of curry-powder. The odour of turmeric is due to an essential oil which is present to the extent of about 1 per cent. The yellow colouring matter is known as *Curcumin*.

Turner's Cerate.—See OINTMENTS.

Turnips (*Eng. turn*, in sense of round; *Lat. napus*, turnip).—Like many other plants of the same order, turnips contain a pungent essential oil. The root is very watery, and contains very little nourishment. Differing from the potato, the turnip contains no starch, but in its place a jelly-like matter, belonging to what is known as the *pectose* group.

Professor Church says:—"This vegetable is the *Brassica rapa* of science, and grows wild in England, but cannot be brought exactly to resemble what it becomes in a cultivated state. It is said to have been originally introduced from Hanover, and forms an excellent culinary vegetable, much used all over Europe, where it is either eaten alone or mashed and cooked in soups and stews. Turnips do not thrive in a hot climate; for in India they, and many more of our garden vegetables, lose their flavour and become comparatively tasteless. The Swede is the largest variety, but it is too coarse for the table.

"White turnips contain:—

	In 100 parts.	In 1 lb. ozs. grs.
Water	92.8	14 371
Albumen	0.5	0 35
Pectose	4.0	0 210
Fat	0.1	0 7
Cellulose and lignose .	1.8	0 126
Mineral matter . . .	0.8	0 55

"For one part of flesh-formers in turnips there are eight parts of heat-givers, reckoned as starch."

Turtle.—The flesh of the turtle contains much less fat than is supposed. It is about three-fourths water, and fat constitutes only about $\frac{1}{2}$ per cent. of its solid ingredients. Genuine turtle soup is more digestible than so-called mock turtle.

Tympanum.—See MIDDLE EAR.

Typhoid Fever, Symptoms of (*Gr. typhos*, smoke, stupor from fever; *eldos*, form).—The principal characteristic of typhoid fever is ulceration of the bowels. Premonitory symptoms may precede the disease by days and even weeks, and are such as restless sleep, mental disquietude, dizziness, pains in different parts of the body, hot dry skin, and a general ill-feeling. The fever generally announces itself with a chill, or long-continued chilly feeling, and the bodily temperature rises. From this moment, whoever has charge of the patient will follow with the utmost exactness the doctor's orders, and will supplement them by extreme attention to the instructions given under **TYPHOID FEVER, TREATMENT OF**.

Typhoid Fever, Treatment of.

—In noticing the symptoms, observe whether the patient talks in his sleep; is clear-headed when spoken to, but listless; has great thirst; a bitter taste in the mouth; a sore tongue; whether there is any rash on the abdomen, or whether the abdomen is puffed up, and note, also, exactly what the character of the secretion is. Write down the bodily temperature,

morning and evening, and the rapidity and evenness of the pulse at a corresponding time. Observe whether the patient seems deaf; whether his breathing is laboured, especially in his sleep, as if there is inflammation of the air-passage. Some or all of these symptoms will be present, and must be reported to the physician, since during his visits they may not be well marked.

The most critical period in bad cases of typhoid fever is generally the third week, but during the whole course of the disease, from its commencement, the care of the nurse must never be relaxed.

Keep the room in winter at 65°. Ventilate it with an open window and an open fire, if possible; at any rate, keep the chimney open; let no draught blow upon the patient, but keep the air constantly changing. The atmosphere is filled with poisonous influences from the disease, coming from the skin, the breath, and the secretions of the sick person; and this poison must be removed by free currents of pure air through the room, but not over the patient.

The bed should be protected with a rubber-cloth across the mattress, then the under-sheet, then the draw sheet, the upper sheet, and a light blanket, when needed; no quilt. It is a mistake to suppose that warm bed-clothing must be used and a free perspiration kept up. A moist skin is, however, very desirable, and will be more likely to be promoted by cool bathing than by warm bed-clothes. On no account allow a patient to be put on a feather bed, and, when it can be secured, use only a small, rather hard, pillow; with a large, easily compressed feather pillow the head is kept too warm, and, sinking into it, the air is cut off from the lungs, which should have fair play. Arrange the pillows in such a way that the chest is expanded, the shoulders being supported.

Three times a day, or oftener, sponge the entire body with warm or cold water, as ordered, adding to a basin half full one ounce of alcohol. Carefully wash all creases of the skin, particularly those parts

which are soiled by the excretions. Neglect in this manner for a while cannot be made good by after care. Bed sores are frequently apt to form where there is not absolute cleanliness; and, as there are frequently involuntary passages from the bowels, a careful watch must be kept, both of the person and clothing, that everything may be clean and dry. Besides the general bathing, the face and hands must be repeatedly sponged during the day. Put a small piece of ice in a sponge, and pass it across the forehead now and then. Dip a soft, thin cloth, folded once, in some evaporating lotion, like alcohol and water, and lay it across the temples, changing it before it becomes warm. All this serves a double purpose—it is cleanly, and it has a tendency to lower the fever which is consuming the patient.

In neglected cases of fever a black crust will form across the lips and teeth. To prevent this, three or four times a day wash the mouth and teeth and tongue with cool water and a soft rag; if the skin is broken, add to a tumbler of water a teaspoonful of chlorate of potash or borax; if the skin is unbroken, salt and water in the same proportion, or a slice of lemon rubbed across the teeth and about the mouth will answer very well. This cooling and cleansing of the mouth is of the greatest comfort to the sick.

Besides the attention given to the patient and bed, care must be taken that the room and its furniture are scrupulously clean—no soiled towels, napkins, or other articles must be allowed hanging about. Keep in the bed-pan, or vessel used, two or three ounces of carbolized water, and throw a towel over it the moment you remove it from the bed, covering handle and all; this not only keeps the air of the room from being contaminated, but prevents the nurse from breathing poisonous exhalations. Typhoid fever is more readily conveyed by these exhalations than in any other way. Carbolized water should be thrown down the water-closet daily.

The night-clothes must be changed morn-

ing and evening, and the sheets as often daily. When the strength of the patient will permit, he should be lifted into a fresh bed for the night, while the warm and damp mattresses in use all day should be carried out and aired.

Never allow your patient, even in the first week of fever, to get out of bed and stand up, or to exert himself in any way while clothing is being changed. By the use of a bed-pan and urinal, all need for exertion is avoided.

As the fever goes on there will be a disposition on the part of the patient to slide down in the bed, and to lie in one position. Watch against this; keep him well up on the pillow; turn him from one side to another, putting a pillow snug against his back to support him. These changes are necessary, because long lying in one position will make the spot on which pressure comes tender, and bed-sores may form. Examine the back and hips and heels daily for redness, and when it occurs, bathe the place daily four times in alcohol and water, dry thoroughly, dust with powder, and use air cushions.

In giving medicine, you have only to follow the directions of the doctor, and report exactly any change of symptoms observed following the dose, and the same with the stimulants. In feeding, all the ingenuity of the nurse will sometimes be needed to make the patient take the beef-tea, milk, etc. Generally, if the beef-tea is quite cold, it will be taken more readily by very sick persons, and, where there is a tendency to diarrhoea, it should *never* be given warm. The kinds of food that may be used are merely specified by the doctor, and will be gruels, milk, beef-tea, etc. In extreme cases, beef-tea of the strongest kind and milk-punch are given alternately, at intervals of an hour, half-hour, or less, as the doctor directs; and, usually, nothing more is required. When brandy or wine is ordered, do not allow the doctor to leave you to your own judgment as to the quantity; request him to say how much of either he wished given in twenty-four hours, and then give it either

as a cool drink with ice-water, or in milk, in broken doses through the specified time.

If the doctor has no objection, as much cold water as the patient wants to drink may generally be given with safety; it is needed to supply the waste through perspiration. Iced carbonic acid water, procured in syphons from the chemist, is better for quenching thirst, and is slightly stimulating. Thin cold arrowroot, or barley, or toast water iced, may be substituted, if there is trouble with the bowels. Patients too ill to ask for water or cooling drink must be given them frequently in a feeding-cup. Never commit the sin of letting the patient go without them. Small bits of ice are refreshing, but do not take the place of water. A cup of tea, prepared as the patient likes it in health, and poured over cracked ice, is very refreshing and harmless. Sick persons frequently prefer and have the sugar omitted.

In the case of delirious patients, never leave such a patient alone; never contradict what he may say; accompany him to the moon if he wishes it. Never speak loud to him; he is not deaf because he is delirious. Keep him in bed; if there is no other way, lay a long folded draw sheet across the blanket, and tuck it well under the mattress on either side. A slight delirium need not excite alarm, unless it is of the low muttering kind, accompanied with pulling at the bedclothes, or reaching of the arms up into the air after some imaginary object. Confusion of thought, loss of recollection of recent events, an anxious look, and a wandering and vacant eye are to be dreaded.

Some of the dangers of the fever are diarrhoea, internal hæmorrhage, perforation of the bowels, and pneumonia, and these are all to be dreaded and guarded against by implicitly following the doctor's directions, by avoiding any check of perspiration through direct draught, by keeping the patient perfectly tranquil and quiet, and without mental or bodily exertion or excitement of any kind from the moment the disease is declared.

During the second week sometimes, and

even as late as the fifth or sixth, when everything seems to be progressing well, death may occur simply from incaution on the part of the nurse, in permitting the patient to sit up or make some seemingly harmless exertion, or to eat harmless food in too large quantities.

Typhoid Fever, Treatment of, in Convalescence.—In convalescence the patient's appetite is very large, and must not be indulged. Give him nourishing food (not solid until distinctly permitted by the doctor), and give it in small quantities frequently; once in two hours, if necessary. Dyspepsia is one of the accompaniments of typhoid fever, and more food than can be assimilated at one time is very dangerous; a moderate indigestion, a trifling diarrhoea, a slight nausea, should therefore be at once reported to the doctor. It is dangerous, because any violent straining may induce perforation of the bowels at the point of ulceration.

The strength must be considerably advanced before going out of doors is permitted; but fresh air should be secured as we have already directed. When the doctor allows a drive or short walk, only bright dry days should be chosen for several weeks after convalescence is complete.

Typhoid Fever from Wells.—In the following anecdote we have a remarkable instance in which it was possible to trace the spread of an outbreak of typhoid fever, which is often so fatal in the country, in the most conclusive manner to the poisoning of a well by discharges from the bowels of a patient ill with the disease. A young man travelling by stage-coach through a country district was taken ill, and, when he could go no farther, was left at the tavern of a small wayside village to be cared for, his illness soon proving to be typhoid fever. Now, it happened that a small brook in a shallow valley divided the village into two portions, each consisting of about half a dozen houses. In the course of a few days new cases of typhoid fever made their appearance in that half of the village to which

the tavern belonged, and soon every house on that side of the stream *except one* was invaded, whilst on the other side of the brook not a case occurred. It appears that the tavern well, which was the only one which had been dug on that bank of the stream, furnished the water supply to all the families *but one* belonging there. *That one family* had had a falling out with the landlord of the inn, and in consequence of this quarrel they drank none of the water, which was rendered impure by the soaking into it of the specific poison of typhoid fever, which struck down all their neighbours in that half of the village.

Typhus Fever.—This is a highly contagious fever, attacking people of all ages, which occurs in an epidemic form, and generally in periods of famine and destitution. It has been known at different times under various names; thus it has been called pestilential fever, brain fever, putrid continual fever, camp fever, gaol fever, etc.

In the individual, sex and age have no influence in determining an attack; nearly equal numbers of both sexes catch it; and children, as well as adults and old people, are liable to it, but more cases have it after fifteen than before. Depressing mental influences, overwork, and anxiety, render the system more liable to contagion; those who are badly fed, and those who suffer from loss of a harvest; people who have suffered the hardships of war, of civil strifes, and commercial distress, are often its chief victims. Overcrowding, dirt, and bad ventilation are important predisposing causes to this affection. Typhus is chiefly met with in cold and temperate climates, but not in the tropics. The chief cause of typhus is contagion, or the transmission of the disease from one person to another; the other causes only render the system more liable to the action of the poison. Nearly all the evidence goes to show that typhus is essentially a disease that is caught by a healthy person coming in contact with one previously affected, and it is as easily caught during convalescence.

Typhus Fever, Symptoms of.—

It is difficult to say how long the disease may be incubating in the system before it appears, but the period is certainly not constant, and seems to vary from a few hours to several days. The onset is marked by a severe headache, loss of appetite, and languor, and aching of the limbs; the invasion of the symptoms is not so sudden as in relapsing fever, but much better marked than in typhoid fever. For three or four days the patient gets worse, being unable to go about, and feeling chilly and prostrate; he then is worse at night and restless; the skin is hot, the tongue coated; there is thirst and sometimes vomiting: by the third day of the disease most are obliged to take to their bed, while this is not the case in typhoid fever, which is a much more insidious disorder. There is a general aspect of a typhus case which an inexperienced person will at once recognise; the patient lies prostrate on his back with a dull and weary if not stupid expression, the eyes are suffused and watery, and a dusky flush overspreads the face. As the disease progresses, the eyes are half shut and the mouth open, he lies moaning and unable to move himself or answer questions; the lips and teeth are dry, and covered with sores and look black; the mouth is dry, the tongue dry, brown or black, and marked with cracks. The temperature rises from the first and reaches 103° or 104° Fahr. by the middle of the first week: the highest temperature reached in the fever is seldom less than 105°, although it may be higher, but the higher the point reached, the greater is the danger.

In mild cases the fever generally begins to leave on the twelfth day. The pulse is generally 120 in a minute, but is very easily compressed under the finger; the heart sounds in very severe cases are feeble, and the first sound may even be inaudible.

A rash appears in nearly every case, and is very characteristic; sometimes it looks as if there were a general mottling just beneath the skin, or distinct spots may appear of small size and purplish colour;

they are irregularly rounded at first, may disappear on pressure, but soon become petechial; oftentimes the two kinds occur together, but sometimes separately. The rash appears on the fourth or fifth day, rarely later. It comes on the back of the wrists first, in the armpits, and over the epigastrium; then it more or less covers the trunk. It seldom comes on the face and neck. The rash has something of a measly look, but the other symptoms are much more severe than are seen in measles. The rash lasts a variable time, but generally till the fourteenth or fifteenth day.

No solid food can be taken, but the patient is always thirsty. The bowels in some cases are confined, in others they are opened too much. There may often be heard rattling or wheezing noises in the chest, and the more so when the face is very dusky. The nervous symptoms are well marked; restlessness, loss of sleep, and confusion of thought first come on; then headache, giddiness, a buzzing in the ears, and deafness. In most cases there is delirium, and the patient is beset with horrid fancies. In bad cases he lies picking the bedclothes, twitching his hands, and muttering to himself, or moaning, or he may be quite unconscious, with wide-open eyes, staring vacantly. Loss of the power of swallowing and insensibility are bad signs, and generally precede death. The urine is passed involuntarily as well as the motions, so that great cleanliness has to be observed.

The duration of typhus may be from three to twenty-one days, but about fourteen or fifteen days is the average time; if a case live more than this time, it will generally recover. The termination in recovery is sometimes quite rapid, and the tongue will clean, the temperature fall, and the delirium cease in a day or two; but generally the improvement is more gradual, and lasts over three or four days. Unlike typhoid fever, there is no relapse, so that when once the temperature has come down, the best hopes may be entertained; nor is he liable to peritonitis or perforation of the bowel, as in typhoid fever.

Habits of intemperance increase the danger in those attacked; bulky people die more frequently than thin ones; black people more than white, and those who are overworked and have mental worry, etc., have the disease with the most severity.

Typhus Fever, Treatment of.

—The patient must be placed in a well-ventilated and large room, so that draughts will be avoided; he should have his bed so situated that the light from a window will not fall on his face, as this is annoying. All curtains, carpets, and bed-hangings should be at once removed; the bed should not be too soft, and a draw sheet or macintosh must be put under the patient. He should not be allowed to exert himself at all, but try and husband all his strength. The greatest cleanliness must be observed, and all excreta removed at once, and Condyl's fluid or chloride of lime should be mixed with them, or any soiled linen may be put in a tub of water, in which is some Condyl's fluid.

Bed sores are very liable to form on the back, and so the nurse must always be on the look-out and try and prevent them coming by smoothing the sheets, drying the patient, and rubbing brandy or balsam of Peru over the part; better still to have a water-cushion or a water-bed. The skin may be sponged down with tepid water, the nurse drying and sponging one part at a time, so as to prevent any undue chill to the surface from exposure; this relieves the patient, and partly removes that disagreeable smell so common from the skin in typhus fever. None but the nurse and doctor should see the patient; all noises must be stopped, and great quiet enjoined; at night-time there may be a small light in the room, but placed so as not to disturb the patient.

Milk must be the chief article of diet, and is best given cold; an egg or two may be beaten up in it, and two or three pints of milk may be given in the twenty-four hours; this must be done regularly every two hours

in equal quantities, and more especially must this be done at night or in the early morning, when the prostration is the greatest. Beef-tea and broths, jellies, extract of beef, custards, etc., may be given, if the patient can take them and wants them, but in very bad cases they will not do so. For drinks in the early stage, lemonade, cold tea, soda water, etc., may be given, but do not let them have too much effervescent drink; when very bad, the nurse will have plenty to do to get the milk down. Stimulants are very useful, but the quantity must vary with each case, and be left to the medical man's judgment; brandy is the best stimulant, and may be given with iced milk; too much must not be given at first, as it causes oppression and inability to take nutrient food; but afterwards, in the stage of great prostration, its proper and careful administration may save the patient's life.

Typhus Fever, Treatment of, in Convalescence.—When the crisis is past, and the tongue clean, some boiled mutton or a sole may be given; also jellies, light puddings, custards, etc. The stimulants may then be diminished, and beer given if preferred. If, however, convalescence be retarded by bed sores, or by the formation of abscesses, the stimulants must be continued, and solid food given sparingly. In some cases the mind is childish for some time after recovery. A trip to the country, plenty of good food, and fresh air, will complete a cure.

Ulcer, Gastric. — See GASTRIC ULCER.

Ulceration of the Stomach.—See GASTRIC ULCER.

Ulcers (*Lat.* *ulcus, ulceris*, running sore).—Old ulcers or sores, particularly on the lower extremities, are of frequent occurrence, and readers living in the country will often be called upon by their poorer neighbours to supply them with what they term healing salves for the purpose of dress-

ing such sores. They need be at no loss to recommend some infallible salve or cerate, if they can credit the high encomiums passed upon advertised nostrums or old nurses' recipes. It is needful to caution them, however, against giving credit to any such general professions, and to assure them that in many cases dry lint is better than any salve; and that in almost every case the mode of dressing an old sore, and the proper management of the patient's general health, is of much greater importance than the nature of the ointment, with which lint or linen rag is spread for the dressing of the sore.

Old ulcers may have arisen from accidental wounds indisposed to heal, or from spontaneous boils, abscesses, or eruptions; or they may be the natural effect of certain morbid conditions of the whole system, venereal, scorbutic, scrofulous, or cancerous. Of such general taints in the constitution, and their local effects, we do not mean to treat in this place, but shall confine ourselves to the consideration of what is generally understood by the term *simple ulcer*, which is usually divided into three kinds—the purulent, the indolent, and the irritable; but as these conditions of the sore are very frequently observed in the same case at different periods, induced by irregularities in the habits of the patient, or superinduced upon the accession of some general constitutional disease, all ulcers, such as are likely to come under cognisance, will be treated under one head, with notice, however, of such peculiarities as require a difference in their mode of management.

Ulcers, Treatment of.—1. *Ulcer on Leg.*—In the case of an ulcer on the leg, if on examination it is found to be covered with a thick, healthy-looking matter, if the edges are regular, not much or at all elevated, and the granulations or new growths are small, conical, and firm, and not disposed to bleed upon slight pressure, and particularly if a delicate white film is seen around the edge of the sore and on the tips of the little conical granulations, it may be

taken as a sign that this ulcer is in a healthy condition, and that some impropriety in the management must have interfered with and retarded its healing. The following is the most approved method of dressing such an ulcer. Apply first, a pledget of dry lint of the size of the ulcer (for nature, in the production of a healthy pus, furnishes the sore with what is better than any salve), and apply over the dry lint a large pledget spread with simple cerate, to prevent evaporation, and the consequent stiffening of the under-dressing. The evil to be dreaded from the dry pus and hardened lint is the removal of the fine film, before alluded to, from the edges of the sore, and from the tips of the granulations, which delicate film is the matrix of the new skin. From the same reason we must add a caution against wiping or even washing such a sore, the matter being the most sanative dressing, and the new skin, or rather its embryo, being very easily detached. Over the large pledget it is advisable to apply a compress of linen rag, and over this a calico roller, to keep all in its place and to defend the sore from external violence. This healthy ulcer need not be dressed oftener than once in two days.

2. *Cup-shaped Ulcer*.—Let us now suppose the case of an ulcer that is cup-shaped, with hard elevated edges, the sore itself smooth, dry, and not very sensitive when touched; the patient is in all probability past the meridian of life, and very likely the veins of the leg will be found to be swollen, or, as medical men term them, varicose in many places. Such an ulcer, if its history be inquired into, is of long standing, has probably appeared more than once to be nearly healed, the hollow having been filled up with granulations, but that it has suddenly altered in its condition, the granulations, which were soft and flabby, having been speedily reabsorbed, and the size of the sore having as suddenly been enlarged. Such a change is likely to occur again unless the patient is guarded against irregularities in his habits, and the local treatment of the sore be properly conducted. If the patient is out of health, this circumstance must be

attended to, and every excess in diet or potation, habitual or occasional, must be carefully avoided.

3. *Local Treatment*.—The local treatment of this cup-shaped ulcer in its present state consists in stimulating the surface of the sore, and in the proper application of bandages. If the hollow of the ulcer be dry and glossy, sprinkle the surface with red precipitate in fine powder, and fill up the hollow with either dry lint, or lint spread with red precipitate ointment. If the edges be covered with hardened cuticle, remove the hard scales with the edge of a spatula, and then draw the point of a stick of lunar caustic moistened over the callous edges, and finish the dressing by the application of the adhesive plaster bandage, and then the calico roller. The dressings should not be removed oftener than once in two days; and when the ulcer assumes a moist appearance, which will usually be the case after one or two such dressings, the powder may be omitted, and the red precipitate ointment applied to the interior of the sore, and the caustic need not be repeated to the edges, unless they are very much elevated and indurated. Should the sore in its progress exhibit soft and broad granulations, and these be disposed to bleed, apply lint moistened in a solution of lunar caustic instead of the ointment, or touch them slightly at each dressing with either blue vitriol or lunar caustic, and continue the use of the same ointment, until the granulations assume a healthy appearance. These directions are of considerable importance in the management of such ulcers; but the application of the straps and bandage is of infinitely more importance still, and some surgeons trust wholly to them, being perfectly indifferent whether any dressing be applied or not to such sores as we are now describing. Such dressings, however, as have been described above are useful, until the hollow of the ulcer begins to secrete a healthy-looking pus, and to show signs of commencing granulations, after which it is very immaterial whether the dressings be continued or not.

4. *Plaster Bandage.*—The objects to be attained by the plaster bandage are, first, a firm and even pressure over the edges and surface of the ulcer; secondly, the contraction of the sore, and consequently diminution of the cicatrix, or scar, by bringing the sound skin at the sides of the ulcer into closer approximation; and lastly, uniform and firm pressure over the whole limb, with a view of supporting and improving the condition of the varicose veins, and perhaps debilitated lymphatics also.

5. *Preparation of Plaster Bandage.*—The adhesive plaster is to be cut into straps of two inches in breadth, and sufficiently long to go round the limb, and to wrap about four inches over. The sore having been carefully freed of superfluous matter—not by washing or rough sponging, but by gently absorbing it, by means of a little soft lint—the sound skin around the ulcer having been carefully washed and dried, and the hair, if in abundance, having been removed by a razor, the middle of the strap is to be applied to the sound part of the limb opposite to, and a little lower than, the inferior part of the ulcer, and the ends drawn over the sore with as much gradual extension as the patient can well bear; other straps are then to be applied in the same way, each above and in contact with the other, until the whole surface of the sore and the limb at least two inches below, and two or three inches above, the diseased part are completely covered.

6. *Calico Roller.*—The calico roller, which is to be applied above the plaster, should be from three to four inches wide, and from four to six yards long, according to the size of the leg. It must be applied with great exactness, and if it be sought to excel in this piece of surgery, application should be made to a surgical friend for a practical lesson or two, which will be of ten times the value of this description. The first circle of the roller should be round the ankle, as near as possible to the foot, the second and third round the foot, the fourth and fifth round the ankle again, and then others spirally round the leg up to the knee,

each circle at about three-fourths of an inch from the lower edge of the preceding, turning down the upper edge of the roller for about half the circumference of the leg in the three or four circles that surround the calf, in order to make the roller lie smooth at this part. Once in two days is often enough to remove the dressing; but should the ulcer, from irregularity of diet, intemperance, or other cause, begin to assume a less healthy appearance, and yet not sufficiently so to require an alteration in the local treatment, and should the discharge in consequence become considerable, should it be thin and offensive, and particularly should the weather be hot, remove the dressings daily.

7. *Flannel Roller.*—When, from any cause, it is not desirable to make use of the adhesive bandage, flannel will be found preferable to calico; and the ulcer having been first dressed, as directed above, and covered with a compress of linen rag, the dresser may trust with confidence to the firm and even pressure of the flannel roller.

8. *Difference of Treatment.*—Ulcers sometimes assume a less healthy appearance than what has been described, and require, at least, for a time, a very different treatment. The margin, instead of being circular, becomes irregular, and the ulcer extends itself by the encroachment of this irregular margin upon the sound skin in a serpentine line, perhaps only on one side of the ulcer. If the margin is elevated, it is at the same time undermined; the discharge is thin and usually copious, sometimes bloody, and often offensive in smell. If the ulcer be large, its surface consists of various distinct hollows or cavities; the granulations, if any, are apt to bleed; and the pain of such a sore is very considerable at all times, usually aggravated, however, in the evening or at night. Such are the characters of what have been denominated irritable ulcers.

Ulcers, Treatment of, Local.—Every ulcer may, by mismanagement or by irregularities in the habits of the patient, be made to assume for a time the peculiari-

ties described immediately above, under "Difference of Treatment," and for this reason the majority of cases admitted into hospitals are, at the time of admission, of this description, and require, for a few days at least, the appropriate treatment of this species of ulcer; but there are some cases also which from peculiarity of constitution assume this character, and require the peculiar treatment of irritable ulcers through their whole progress. The local treatment of such sores is by anodyne fomentations and poultices; the constitutional by anodynes and alteratives. A decoction of poppies makes the best fomentation, and linseed meal brought to the proper consistence by a strong decoction of poppies, the best poultice. These sores should be washed at every dressing with a sponge and some of the warm fomentation; if the fœtor is considerable, a rag wetted in a solution of chloride of sodium may be laid immediately over the sore; or, if this gives pain, over the poultice. These are the appropriate dressings till the ulcer re-assumes the character of the healthy, or of the indolent sore above described, when the treatment will be, as recommended for them respectively; but, as we have observed before, in some cases the irritable character still remains unaltered, and the peculiar treatment here recommended, namely, the anodyne fomentations and poultices, must consequently be persevered in till the cure is completed.

Ulcers, Treatment of, Constitutional.—The constitutional treatment consists in giving opium or henbane every night, with or without calomel or blue pill; and rhubarb with soda, and perhaps quinine through the day, according to the constitutional peculiarities, which professional judgment can alone appreciate.

Ulna (*Lat. ulna; Gr. olene*, the elbow), the larger of the two bones that form the forearm, or that portion of the arm between the elbow and the wrist. The ulna and radius constituting the forearm are connected with the humerus by a hinge-like joint,

which admits readily of flexion and extension, but not of rotation; and, as the articulation is of a peculiar construction, it is rarely dislocated. The movements of pronation and supination, or turning round the hand, are effected, not by the elbow joint, but by the radius moving upon the ulna by means of joints formed for this purpose.

Umbilical Hernia.—*See* HERNIA, UMBILICAL.

Underfeeding.—The majority of the inhabitants of the world are underfed. Of the twelve hundred million inhabitants of the globe only a very small fraction systematically get enough to eat. The almost universal condition of existence is poverty, and in no other direction is poverty so widely felt as in want of food. Clothing of some kind, cheap or luxurious, and enough for health, is enjoyed by all races, from the lower savages to the more enlightened. A suit, when once provided, lasts long, and when lost or worn out can easily be replaced by some other, which is all that is needed for protection, if not for luxury. There are very few, and these are usually of the very poorest classes in civilized countries, who need to suffer from cold through lack of clothing.

Food, on the contrary, is usually more or less difficult to get, and civilization is always expensive. Even when food is abundant, the quality may be so bad that those who subsist on it are poorly nourished. In this matter of diet extremes meet—the savage goes hungry because he is too lazy to go after food, or perhaps because it cannot be found: the wealthy and fashionable restrain their appetite because fashion—more tyrannical than hunger even—enjoins it, or because they are so absorbed in engrossing pursuits that the cry of the passions is not heard.

To those who have never reflected on the subject it may seem like exaggeration to say that, as a general fact, at least nine-tenths of the lower orders suffer physically, morally, and intellectually from being over-

worked and underfed; and yet, says a well-known authority, I am convinced that the more the subject shall be investigated, the more deeply shall we become impressed with the truth and importance of the statement. It is true that very few persons die from actual want of food; but it is not less certain that thousands upon thousands are annually cut off whose lives have been greatly shortened by excess of labour and deficiency of nourishment. It is a rare thing for a hard-working artisan to arrive at a good old age. They almost all become prematurely old, and die off long before the natural term of life. It is in this way that, as is remarked by Dr. Southwood Smith, the mortality of a country may be considered as an accurate indication of the misery of its inhabitants. According to Villermé, the rate of mortality among the poor is sometimes double that among the rich. Thus it was found, he says, that in a poor district in France one hundred die, while in a rich department only fifty are carried off; and that, in taking into account the whole population of France, a child born to parents in easy circumstances has the chance of living forty-two and a half years, while one born of poor parents can look for no more than thirty.

Underfeeding, Effect of, on Mind.—*See* MIND, EFFECT OF UNDERFEEDING ON.

Underfeeding, Gluttony and.—*See* GLUTTONY AND UNDERFEEDING.

Unfermented Bread. — *See* AERATED BREAD AND FERMENTED BREAD.

Unfermented or Unleavened Bread.—This is prepared in two forms, one one light and spongy, the other heavy and compact. For the first, *see* AERATED BREAD. The second condition is that in which all the varieties of biscuit appear—the chief ingredient in these being flour worked into dough with hot or cold water.

Universal Bill of Fare.—*See* BILL OF FARE, UNIVERSAL.

Unwell, Ceasing to be.—One of the most presumptive signs that a woman has of her being with child is the cessation of the monthly flow; it is also the first to manifest itself. Taken alone, the stoppage of the monthly discharge is not sufficient proof that pregnancy has occurred; but if a woman who has been menstruating regularly up to the time of her marriage ceases to be unwell shortly after, it is presumptive of her having conceived. A woman may, however, be unwell for one or two periods after conception has occurred; or, on the other hand, the monthly discharge may be in abeyance from the presence of disease, as in a woman suffering from consumption. Again, cold or severe mental emotion may produce the same effect.

Unwholesome Dishes.—Among the devices of cooks which are very apt to prove causes of disease may be enumerated lobster salad, fried oysters, boiled crabs, rich pastry, boiled dough in the form of plum puddings, dumplings, etc., boiled corn-beef, hard-boiled eggs, pork in most of its forms, cucumbers, however prepared, excessively sweet dishes, and rich gravies in general. People who are not iron-clad inside and out, and who will trifle with their health and life by lighting fires with kerosene, playing with loaded fire-arms, or eating these so-called “delicacies,” should at least have their wills made, and all their property judiciously disposed of.

Upper Jaw.—*See* JAWS.

Urinals (*Lat.* *urina*; *Gr.* *ouron*, urine).—These should be thoroughly clean and amply supplied with running water. Night and morning they should also be well flushed down. It is usual to have some chloride of lime placed about, so as to remove any noxious odours. Great pains should be taken at all times to remove any accumulation of fluid.

Urine.—Urine is generally of a light amber colour, of an acid reaction, turning blue litmus paper red, of a peculiar odour and saline taste. Its specific gravity on the average is 1·020, pure water being taken as 1·000; but this will vary with the time of day, and with the amount of liquid food absorbed into the system. The quantity of urine passed during the twenty-four hours varies a good deal, but on an average

may be estimated at forty to fifty ounces. An average healthy man excretes about fifty ounces, or 24,000 grains of water in a day.

Urine, Composition of.—In this are dissolved 500 grains of urea, and from ten to twelve grains of uric acid. The following table shows the composition of healthy urine :—

		In 100 parts of solid matter.	
Solid matters, 43·2	Water	956·80	
	Organic matters, 29·79	Urea	14·23
		Uric Acid	0·37
		Alcoholic extract	12·53
		Watery extract	2·50
		Vesical mucus	0·16
	Inorganic matters, 13·35	Chloride of sodium	7·22
		Phosphoric acid	2·12
		Sulphuric acid	1·70
		Lime	0·21
		Magnesia	0·12
		Potash	1·93
		Soda	0·05
		...	33·00
		...	0·86
		...	29·03
		...	5·80
		...	0·37
		...	16·73
		...	4·91
		...	3·94
		...	0·49
		...	0·28
		...	4·47
		...	0·12

In addition, the urine contains carbonic acid, oxygen, and nitrogen in a gaseous form, but very small quantities of the two latter substances. Urea is a nitrogenous product, and nearly all the nitrogen which daily enters the blood in such food as the proteid compounds passes off in the urine after being used up in the system. By taking an animal diet the urea is increased in amount, and diminished by living upon a vegetable diet.

Urine, Conditions of.—Through the kidneys, with the urine, are drained away many of the impurities of the blood and any excess of its watery ingredients. The chemical composition of the urine is constantly shifting, and even with healthy persons there are continual changes in the colour and quantity of that daily passed.

The normal colour is like light amber, or wheat straw, and the normal daily quantity from thirty to fifty ounces.

It is always somewhat acid in health, and will turn blue litmus paper red; it is most acid just before eating, and less so during the process of digestion.

The conditions vary :

With age, in children the quantity in proportion to the weight of the body being nearly twice as great as with adults.

With sex, the quantity being somewhat more with females than males.

With seasons, less being passed in warm, dry weather than at other times, for the reason that perspiration is profuse and urea passes off by the skin.

With times of the day, being more deeply coloured in the early morning, paler during the forenoon, and deeper again in the afternoon and evening.

With differences in food and drink, many vegetables, acid fruits, liquids, etc., increasing the quantity, and producing other changes.

With violent exercise, which causes certain chemical changes.

With mental exertion or emotion, as in over-study, anger, fear, hysteria, when the quantity of urine passed is sometimes suddenly increased.

Variations from the normal condition for a day or two are of no importance, but should they be frequent and long-continued, and especially if accompanied by other symptoms which do not occur in good health, attention should always be given to the matter. In different illnesses the variations from a healthy condition should be carefully noticed and reported; very important indications of the presence and progress of the disease are given in this way.

Urine, Examination of.—In preserving urine for examination by the physician, the nurse should very carefully wash the bottles in which she is to put it, using only clear glass, and washing them first in warm and then in cold water, until they are perfectly clean. The corks should be new, or washed and scraped. A label should be attached with the date and hour at which the urine was passed, and a note as to whether it was shortly after eating or not. The nurse must be able also to tell just what was eaten, and what the mental condition of her patient was at the time, and whether any pain was felt, or difficulty in passing urine.

Urine, Incontinence of. — See INCONTINENCE OF URINE.

Urine, Retention of.—See RETENTION OF URINE.

Urine, Suppression of. — See SUPPRESSION OF URINE.

Urine, Variableness of, in Quantity, etc.—The quantity and composition of the urine vary greatly, according to the time of day, the temperature and moisture of the air, the fasting or replete condition of the alimentary canal, and the nature of the food.

The urine is lighter and much more abundant in cold weather, because the pores of

the skin are measurably closed, and a large portion of the water which would have passed from the body in the shape of perspiration is prevented egress, and it seeks an outlet through the internal organs. But if a man work several hours together in a heated apartment, or under any other circumstances in winter-time, by which the "perspiration pours off" his body, then the urine will be scant and high-coloured, that is, inclined to a red or yellow colour. In the summer, when the perspiration "streams from every pore," comparatively little water is left to be passed through the bladder, and that is highly coloured and is heavy, and, being so, the call to urination is frequent. But suppose in warm weather, during the hottest day of summer, a person eats a whole water-melon, the urine will be as copious and as light-coloured as in winter.

Urticaria (*Lat. urtica*, stinging-nettle).—This disorder, which is commonly known as nettle-rash or hives, is an acute affection often appearing in the course of a few minutes. Raised patches, called weals, of various shapes appear abruptly on different parts of the body, no part being exempt from their invasion. Their arrangement is irregular. Their colour is usually whitish, or pale at the top and red at the base, which is surrounded by a ring of reddened skin, which shades off into the natural colour. To the touch they are sometimes firm. They are often evanescent, fading as quickly as they came, and are often seen to disappear and reappear in other parts during the same attack. No alteration of the skin is seen after the weals have disappeared.

Urticaria is invariably attended with most annoying stinging and burning of the affected skin. The irritation is often almost intolerable. Scratching and rubbing aggravate the symptoms. The duration of the acute form is from a few hours to a day or two, and is greatly influenced by the removal of the exciting cause.

Certain individuals are much more prone to this affection than others; and external

irritants or internal derangements that produce in some persons a slight local inflammation of the skin, or a simple erythema, will in others give rise to nettle-rash. Among the external irritants which not unfrequently cause it may be mentioned fleas, bed-bugs, mosquitoes, and other insects, the jelly-fish, so common in certain seasons in the waters of our coasts, and the stinging-nettle, which last gives to the eruption its name.

Urticaria, Causes of.—By far the greater number of cases arise from internal causes; these are chiefly referrible to disturbances of the digestive organs. Indigestion from over-eating highly seasoned dishes, and excess in drink, often cause the outbreak. Certain articles of food, many of which are in season in summer, and are esteemed as delicacies, are especially apt to produce this affection. Such are sea-food—crabs, lobsters, clams, oysters, fish; some of the small fruits, as strawberries and raspberries; pork and sausages, and some other articles. These things are eaten with impunity by the vast majority of persons; it is therefore evident that they produce nettle-rash in the minority by reason of some personal peculiarity.

Numerous other agents are efficient causes of the disease; but it would be foreign to the purpose of this book to enter into the discussion of them. A sudden checking of the perspiration has been, in a few cases that have come under observation, the only assignable cause. Intense motion has been also assigned as a cause.

Urticaria, Diet in.—Urticaria, or nettle-rash, is one of the most difficult diseases in which to regulate the diet, for while most articles can be taken with impunity, some particular one, perhaps the least suspected, may be the cause of the trouble. The articles most commonly injurious are shell-fish, also stale fish, mushrooms, bananas, strawberries, raspberries, and pine-apples; but in obstinate cases other articles may be the cause.

It is a mistake, however, because in certain persons shell-fish may cause this eruption, to think that shell-fish are to be avoided in all skin diseases. On the contrary, they are very constantly ordered to be taken by medical men, who consider them beneficial in most diseases of the skin as a substitute for meat, of which we, as a people, eat far too much.

Urticaria, Treatment of.—It is obvious that successful treatment will depend upon a prompt recognition of the cause. As a rule this will be readily discovered. Measures directed to ill-removal or neutralization must be at once resorted to. Inquiries into the nature of food recently taken should be instituted. It may be necessary to administer an emetic, especially if the attack be severe, or the suffering great. A free movement of the bowels should be brought about as soon as possible, and laxatives employed from time to time, during the attack, if protracted. For this purpose, nothing is better than magnesia or the effervescing citrate of magnesia. The alkaline and aperient effervescing mineral waters are useful and grateful. There is usually decided acidity of the stomach, which should by no means be overlooked in the management of this disease. A little bismuth will be found beneficial in removing this condition.

Local remedies are very important, and must be used with an energy proportionate to the severity of the symptoms. They are most conveniently applied in the form of lotions or baths; among the former are vinegar and water and alcohol and water. For this purpose, bathing whisky or bay rum may be used, soda, a drachm to half a pint of water, and weak solutions of carbolic acid.

The baths most useful are those containing carbonate of soda or bicarbonate of potash, of the strength of three ounces to thirty gallons; these substances may be combined with advantage. Bran and starch baths are also useful in allaying the stinging and burning. Acid baths are often

grateful, the strength being half an ounce of nitric or sulphuric acid to thirty gallons. The temperature of the bath should be warm enough to be agreeable, and the patient should remain in it not less than fifteen or twenty minutes. The strength of the bath will vary in accordance with the patient's skin. The above directions may be regarded as meeting the requirements of the average case.

Acute nettle-rash is likely to recur from time to time, unless the exciting cause be sedulously avoided.

Use of Medicines, Incautious.—See MEDICINES, INCAUTIOUS USE OF.

Use, Prudent, of Intellectual Power.—See INTELLECTUAL POWER, PRUDENT USE OF.

Uses of Smell.—It has been remarked by Mr. G. H. Lewes that "the uses of smell are important, and in animals much more so than in man. It is by smell that they are guided to their food; by smell that they hunt their prey; by smell they recognise each friend or foe in the dark. That we are not endowed with such keenness of scent is probably owing to the comparatively small exercise of that function in civilized life. Having so many other avenues of sensation, this one falls into abeyance and becomes weakened from disuse. James Mitchell was born blind, deaf and dumb; yet by smell he at once perceived the entrance of a stranger into the room. People who have a strong antipathy to cats detect their presence by the odour, in circumstances which would be thought impossible. A lady in my study one day suddenly remarked, 'There is a cat in the room'; on my assuring her there was none, she replied, 'Then there is one in the passage.' I went out to satisfy her; there was no cat in the passage, but on the first landing-stairs, looking through the railings, there, sure enough, was the cat."

Useful Recipes for Disinfectants.—See DISINFECTANTS, USEFUL RECIPES FOR.

Usefulness of Bathing.—See BATHING, USEFULNESS OF.

Uvula.—See PALATE.

Vaccination (*Lat. vaccinus*, of or relating to a cow; from *vacca*, a cow).—One would have thought that the time had arrived when every person of unbiassed mind had become fully aware of the great benefit that was conferred upon mankind when Jenner discovered in vaccination a preventive against small-pox. Daily observation, however, goes to prove that there are yet a few persons in our land so ignorant and blinded that they are unable to perceive any good that has resulted from it. Its utility will be fully apparent from remarks under the heading, VACCINATION, FACTS IN FAVOUR OF, which *see*.

Vaccination, Course of.—As a rule, the operation of vaccination is performed in boys upon the left fore-arm, just below the elbow; in girls upon the arm, a little below the shoulder, this latter difference being a concession to fashion, at the risk of slight but positive additional danger to the infant. In this country and on the Continent, two, three, or more punctures, or groups of scratches are made, and some recent observations seem to indicate that a greater security is thus insured against small-pox. The operation of vaccination is best performed by means of Dr. Graham Weer's vaccinator. A few scratches on the outer aspect of the arm, midway between the shoulder and the elbow are to be made; and then the vaccine lymph carefully applied. The arm should be allowed to dry thoroughly before being covered. If the vaccination succeed, there is nothing visible, except a slight trace of the wound, till the third or fourth day after the operation, when a little redness may be detected; on the fifth a small vesicle will be discovered; this undergoes enlargement, and on the following day (sixth) is surrounded by a narrow red line; on the seventh day the vesicle is well formed of a round or oval shape; on the eighth and ninth the red

border extends and the central vesicle enlarges; on the tenth or the eleventh day declension has begun, and by the twelfth a pustule, with a scab, has resulted. Gradually this darkens, becomes dry, and separates. The lymph used should always be had from a reliable source, and when perfectly satisfactory lymph cannot be obtained, as is often the case in country districts, the vaccination should be postponed.

Vaccination, Facts in Favour of.—1. Persons who have had the small-pox are not liable to take it a second time. In the last century, inoculation of small-pox was practised, because it was known that small-pox thus communicated was usually milder than when caught naturally.

2. Cow-pox is a modified form of small-pox, and it has been clearly proved that those who have had it are very much less liable to take small-pox than others, and are as effectually protected as those who have already had small-pox.

3. Cow-pox is communicated by vaccination. Jenner discovered that persons who had caught cow-pox from the cow escaped small-pox, and thus was led to advise vaccination.

4. Forty-five millions of the people of Europe died from small-pox in the hundred years preceding the introduction of vaccination at the beginning of this century; whilst not more than two millions have died from this disease during the seventy years in which vaccination has been practised. In London, before the introduction of vaccination, every *tenth* death that occurred was due to small-pox; now only one death in every *eighty-five* is due to this disease. Even greater difference has been observed in other towns and cities of Europe, as in Trieste, where the deaths from small-pox have been *seventy-five* times less since than before vaccination; in Moravia *twenty-one* times less; in Silesia *twenty-nine* times less; in Westphalia *twenty-five* times less; and in Berlin *nineteen* times less. Where vaccination has been stringently enforced, death from small-pox has been still more dimin-

ished. In Ireland, where this disease was once a scourge, it has now become almost unknown, and a similar good result has been obtained in many districts in India. When small-pox has been rife among the inhabitants of a city or district, it has been repeatedly observed that the unvaccinated have perished, and the vaccinated survived or altogether escaped. Very carefully kept records in hundreds of places in Europe and elsewhere have proved this. Out of thirty vaccinated nurses constantly employed at the Small-pox Hospital, not one ever contracted the small-pox; of the patients admitted to this hospital, from 1836 to 1851, thirty-seven in the hundred of those unvaccinated died, whilst only six in the hundred who had been vaccinated (well or badly) died.

5. In England there is a larger proportion of unvaccinated persons than in any other country of Europe, and consequently a greater number of deaths from small-pox are shown, by the public registration, to occur.

6. Whilst small-pox kills so great a proportion of the unvaccinated whom it attacks, the inoculation of cow-pox, *i.e.*, vaccination, seldom or never produces any consequences of an injurious nature. The authenticated fatal cases of erysipelas so produced are not more numerous than those which follow the prick of a pin. There is no proof that those who have been vaccinated suffer from scrofula or any similar disease as a consequence of vaccination alone. According to the Registrar-General's returns these diseases have diminished in frequency since the introduction of vaccination. That which follows after a thing is not necessarily caused by it. It is a matter of necessity that persons who have been vaccinated should have diseases after this operation as well as before it; but these cannot rightly be attributed to vaccination.

7. The laws of our country demand that every one should be vaccinated, because persons who are unvaccinated are liable to take small-pox and die. The law does not allow the right of a man to catch small-pox or to

expose his children to it, as it does not allow him to kill himself or his children. It has been recently made unlawful for a man to accumulate dirt and filth, which may become the means of spreading disease and death among his neighbours; and, similarly, the law does not allow a man to make his body, or those of his children, hot-beds for the development of the deadly small-pox, which may spread to his neighbours.

8. Although very rarely the eruptions of other diseases have, through the carelessness of medical practitioners, been mistaken for cow-pox, yet it would be as reasonable to ask for the abolition of railways because of railway accidents, as to demand the abolition of vaccination on account of such accidental occurrences.

9. The great means whereby small-pox may be wholly exterminated is universal vaccination.

10. Small-pox is one of the greatest curses of man, whilst vaccination is one of his greatest blessings.

Vaccination, Small Pox after.

—See SMALL POX AFTER VACCINATION.

Value of Life, Pecuniary.—See

PECUNIARY VALUE OF LIFE.

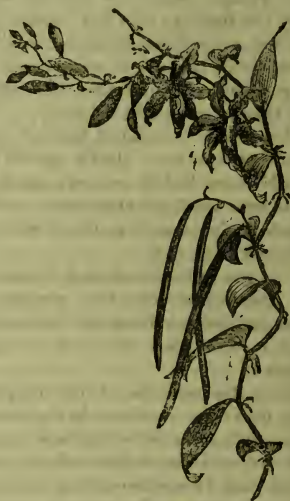
Vanilla (*Fr. vanilla*; *Spanish vainilla*; from *vaina*, sheath or pod).—The fruit of the vanilla has long been used in this country for flavouring chocolate and cocoa, to which it gives a flavour agreeable to some palates, though it is disagreeable to others. It is also used to impart a flavour to puddings, cakes, custards, and such like. Spanish physicians use vanilla in medicine, and esteem it grateful to the stomach and brain, as well as for curing the bite of poisonous animals.

Vapour Bath (*Lat. vapor*, steam).—

The vapour bath is very useful in promoting perspiration, and is employed as follows: the patient being seated on a chair, a bucket or jar filled with boiling water is placed at his side, and the whole enveloped

in a blanket. Friction may be employed, if necessary, while the patient is in the bath.

The simplest way of giving a vapour bath is to undress the patient, put a thin flannel or woollen cloth about him, seat him in an arm-chair, stand by his side a pail of boiling water, into which, as it cools, you put bricks made very hot, and cover the patient, chair, and pail with a large blanket, fastened securely at the neck. The steam will soon produce the perspiration required. The greatest care will be necessary to see that



VANILLA. (*Vanilla aromatica*.)

the bed, bed-clothes, towels, and night-shirt are made hot before the patient uses any of them after the bath. Hot-air baths may be given in the same way with a spirit-lamp or gas-stove and no water. Guard against fire.

Varicella.—See CHICKEN POX.

Varicose Veins.—See SWELLING OF FEET AND LEGS, etc.

Varieties of Voice (*Lat. varietas*; from *varius*, different).—Four chief varieties of voice are recognised in vocal music or

utterance—two in the voice of the male and two in that of the female. There are the bass and tenor, and the contralto and soprano, respectively. The peculiarity depends in part upon the natural pitch of the voice, and to a much greater degree upon its timbre or quality.

The physical cause of this difference in the true character of the male and female voice, or of the two varieties in either sex, is not understood. Here size of the larynx does not account for it, inasmuch as a small male larynx does not furnish the soprano or contralto quality, nor a large female larynx produce a tenor or bass voice. The voices of young boys, before puberty approaches, approximate the character of female voices; and formerly the best teachers for the female voice were those males in whom the feminine character of voice used to be artificially preserved for church purposes by a cruel operation, now happily abandoned.

Variola.—See SMALL POX.

Veal (*Fr.* veau; *Lat.* vitulus, calf).—

Veal, although affording less nutriment than the flesh of the full-grown beast, is tender and nourishing; but it is not so easily digested nor so well suited to weak stomachs as is commonly imagined. Indeed, in all stomach complaints it is improper. It is not, however, of a heating nature, and may therefore be allowed to patients convalescent from an attack of fever, and to those who have a disposition to bleeding from the lungs or elsewhere, especially with the addition of some acid. The juicy kidney-piece, or the breast of veal, deserves the preference of the valetudinarian. The flesh of calves which have been robbed of their blood by repeated bleeding, or raised by the hand with milk adulterated with chalk, and subjected to confinement in small dark places so as to prevent all motion, is decidedly objectionable, being much less wholesome and digestible than that of the healthy animal just taken from the cow.

Veal-Tea.—Take a pound of fillet of veal, free from fat, slice, and then boil it for

half an hour in a pint and a half of boiling water.

Vegetable Substances, Relative Digestibility of.—See DIGESTIBILITY OF FOODS.

Vegetables (*Lat.* vegeto, I grow).—

The following physiological arguments have been brought forward in favour of vegetarianism by its supporters, and are given here as they have been set forth by one who is certainly the foremost intellectual vegetarian of his day:—

“The subject,” says this writer, in a paper in *Fraser’s Magazine*, “admits, and has received, a purely scientific treatment. First, what are the diseases by which our richer classes are chiefly attacked? Those which stand in close relation to gout. Dr. Prout recounts them as ‘strumous, lithic acid, and gouty diseases,’ and attributes them to an imperfect assimilation of the albuminous principles of food; that is to say, to an excess in flesh diet.

“Next, what classes of men recover best from wounds and severe accidents? Much important testimony affirms it is those who eat least of flesh meat. Eminent surgeons testify that in this respect the Indians and the Chinese far surpass the English soldiers, and attribute it to ‘their vegetable regimen.’ As gout is not heard of among Irish peasants, so too, it is alleged, their blood is less inflammable than that of well-fed Englishmen, and they recover better from severe hurts.

“Thirdly, it is claimed that vegetarians have more exemption from the attacks of epidemic diseases than flesh-eaters; in particular, it is denied that any case of cholera has been found among them.

“Fourthly, it is admitted by physiologists in general that the cases of extreme longevity are almost solely found among vegetarians. Of course many things must conspire that an individual may attain the greatest age possible to man. He must have had no hereditary weakness, no violent shock from accident or acute disease, no

permanent excess of toil or distressing care, no long exposure to bad atmosphere in cities; and if vegetarian food is of critical importance, he must have been a vegetarian from childhood; then possibly he will live to the age of a hundred. It is ridiculous to expect that by adopting this practice late in life an individual can become signal in longevity; yet it is maintained he may somewhat lengthen his years, especially because the diet itself suffices to cure many maladies, probably by the greater purity which it gives to the blood.

"The case of Professor Adam Ferguson is signal and notorious. When past fifty, he was seized with very alarming paralysis. His friend, Dr. Black, the celebrated discoverer of latent heat, who was no vegetarian, was called in to treat him, and prescribed a strict vegetarian and milk diet. Under this he entirely recovered; ate no meat, and drank only water or weak tea, for the rest of his life; had no second attack, and after the age of seventy was remarkably hearty, continuing in much vigour until almost ninety. He lived to ninety-three. The effect of a mere vegetarian diet to renew shattered life appears here undeniable.

"Fifthly, fruit, which is presumed to have been the food of original man—of man who is born 'a tropical product,' with hairless body—fruit is to him peculiarly medicine as well as food. The Germans have their 'grape cure,' and among fruits let grapes by all means have a most honourable mention; yet happily they do not stand alone. When a child was covered with ulcers from head to foot, and blinded by them—when physicians despaired, and confessed drugs to be useless—Mr. S. Rowbotham, a surgeon of Stockport, guiltless of vegetarian theory, cured the patient perfectly in a few months by a diet of stewed English fruit and honey.

"Sixthly, to pass from these details of experience to the higher region of comparative anatomy and physiology, it is contended that the interior organs and teeth of man show him to have been made for a frugivorous animal. To this day even surgeons and physicians of eminence may be heard to

say (what betrays an ignorance in them disgraceful) that our canine teeth show us to be made for tearing flesh. That this is a gross error is no new discovery. Linnæus, Gassendi, Ray, Cuvier, Thomas Bell, Lawrence, equally with Professor Richard Owen, avow our teeth not to be canine, but to be nearest to apes' teeth. Their fangs are indeed larger than ours, and well adapted to crack strong nutshells; but none of them in a state of nature eat flesh. Indeed, any one who examines a dog's teeth sees at once the entire contrast; yet our scientific men (so called) allow the epithet canine to run away with them! A close comparison of the digestive organs in man with those of the domestic animals on the one side, and of the carnivora on the other, shows distinctly that his organs are intermediate, as are those of the apes. The entire argument is very extensive. Mr. John Smith develops it in his 'Fruits and Farinacea'; here it can only be pointed at. He admits that art and the use of fire make flesh tolerable to us as food, but denies that that which art enables us to do can ever thereby become normally necessary, or tend to so great robustness as the use of that food to which our physiology and anatomy direct us. The mediate place between herbivorous and carnivorous animals is denoted by the epithet *frugivorous*. This is the place of man, also of the apes and monkeys; apparently, too, of the bear and the pig. The horse, also, has some approximation to the human organs, perhaps, because grain is a food so well suited to him.

"Seventhly, in detail certain peculiarities are alleged, to which a reader (if he concedes the facts to be all correct) will give what weight he thinks they deserve. It is said that no carnivorous animals sweat, but all herbivorous animals sweat; and since man sweats, this allies him more closely to the herbivora. It is further said that in the carnivora the salivary glands are comparatively small, in the herbivora very large; and the reason, too, is plain: the herbivora masticate their food with their broad grinders, and need saliva for the operation;

but the carnivora never grind food—they have no grinders, and they cannot masticate. Now, in all these points, man resembles the herbivora."

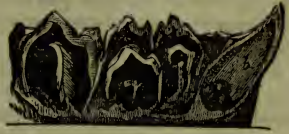
Vegetarian Diet.—The human intestinal canal being of medium length, and the human teeth being of a suitable construction, we may naturally infer that man was designed to eat both vegetable and animal food. As no animal can live agreeably or healthily except in conformity with the laws of its constitution, it follows that man will not thrive unless with a mixture of animal and vegetable food.

"The followers of Pythagoras," remarks a writer in *Chambers's Information for the People*, "argued from the cruelty of putting animals to death, that it was proper to live on vegetables alone; and eccentric persons of modern times have acted upon this rule. But the ordinances of Nature speak a different language; and if we have any faith in them, we cannot for a moment doubt that a mixture of animal food is necessary for our well being. On the other hand, we cannot dispense with vegetable food without injurious consequences. In that case, we place in a medium alimentary canal a kind of food which is calculated for a short one, thus violating an arrangement of the most important nature. A balance between the two kinds of food is what we should observe if we would desire to live a natural and healthy life."

On this subject we may quote from the late Dr. Lankester, one of the greatest of modern authorities on the subject of Food:—"I am," he says, "an advocate for a mixed diet for man, and I would particularly draw your attention to a statement that is often made, that it is not necessary to partake of animal food at all. Persons who argue thus put forth as a first ground the immorality of the act, and the impropriety and wickedness of taking life at all. This is surely an absurd assumption; for the Creator has made a certain number of creatures that could not live upon vegetable food, and they naturally prey upon the lower animals
M. D.

which feed upon the grass and the herbs of the field. The lion and tiger exist by prey; and it appears to me that man has a perfect right, without being charged with immorality or impropriety, to take the lives of the lower animals for his food.

"Then anatomical arguments are adduced against animal food. I must here again join issue, for I believe I can show from his structure that man is more adapted for a mixed diet than for either vegetable or animal food alone. Look at the jaws and teeth of a carnivorous creature—a tiger, for example, or a lion. The jaws are so constructed that they will only move up and down like a pair of scissors. Observe also their sharp-pointed carnivorous teeth, as shown in the accompanying illustration, especially their great canine teeth. They are intended for holding and cutting up



SECTION OF LION'S TEETH.

living food. Now look at the jaws of a horse. His lower jaw is quite movable from side to side. Instead of pointed teeth, they are flat, and every arrangement is made for grinding—not cutting—the food; and this is the character of the mouth of a herbivorous animal. If, however, we take the skull of a man, we shall find he has certain teeth—canine teeth—which, like those of lions and tigers, have the power of cutting; but he has also flat teeth, and the power of moving his lower jaw laterally, and can bring these flat teeth across each other for the purpose of grinding his food; so that you see he is evidently provided with instruments to enable him to prepare for his digestion both vegetable and animal food. I might prolong this argument by showing you the complicated structure of the stomach of the sheep and the ox, and, comparing this with the stomach of the lion,

point to the fact that the human stomach has neither the complicated structure of the one nor the simplicity of the other. There are many other points of structure in which man seems to stand between these two groups of animals—the herbivorous on the one side and the carnivorous on the other—which would seem to indicate his adaptation for taking both kinds of food.

“But, whatever be the arguments of the vegetarians, they do not practically carry out their doctrines, for they partake of considerable quantities of animal food. They take milk, and butter, and cheese, and eggs. A well-known authority states that he has taken a vegetarian cooking-book and calculated the quantity of milk, butter, and eggs employed in their food, and found that, if a vegetarian family lived in accordance with the rules of this book, each member would consume half an ounce more animal food in a day than he did in his own family—and he was no vegetarian. So that you see people are deceiving themselves who enforce such a doctrine as this.

“On the other hand, there are some persons who advocate a diet of purely animal food. I had a book sent me the other day, written by a gentleman at Liverpool, who states that he has discovered that the panacea for all human evils is the taking of animal food alone; and he takes the opportunity of stating that he is looking for some young lady of similar principles and practice who will link her fortunes with his and establish a family of carnivorians.

“There is no question that a man may live on a purely vegetable diet; but the question is as to whether that kind of diet is best for the community. We find in the history of man that those races who have partaken of animal food are the most vigorous, the most moral, and the most intellectual races of mankind. We find that the ancient Jews, although they had certain sanitary regulations in regard to killing and eating animals, partook largely of meat, and were among the most vigorous people of their day. We find in modern Europe that those nations who take the most animal food

are the strongest; and among ourselves it is just in proportion as we give our labourers animal food, or wages to procure it, that they are stronger and better able to do their work. It is vain for a man to expect to get through intellectual or physical labour without an abundant supply of the material of thought and of physical power, and animal food is one of the readiest means of affording this supply.”

Veins, The (*Lat. vena*, blood-vessel).—The very small tubes in which the capillaries end are called *veins*. The arteries becoming smaller and smaller, end in the capillaries; and the capillaries becoming gradually larger, end in the veins, which, in their turn, gradually become larger and larger until they join the main large trunks or pipes which carry the blood back to the heart. Thus the arteries carry the blood away from the heart to the capillaries. After the blood has passed through the capillaries, it passes through the veins and returns to the heart. The veins are tough-walled tubes or pipes, and they are remarkable inasmuch as they possess valves or cup-like folds of their lining membranes so arranged that, while they allow the blood to flow towards the heart from the capillaries, they will not allow the blood to flow back from the heart to the capillaries. The blood can only go in one direction—towards the heart.

Velocity of Transmission of Impressions by Nerves (*Lat. velocitas*, swiftness; from *velox*, swift).—The velocity with which impressions are transmitted by the nerves has been recently made the subject of investigation; but it is doubtful how far the observations are to be depended on, in consequence of the various sources of fallacy by which such experiments are beset. According to one authority the velocity is 34 metres, or about 112 feet per second in man; whilst another fixes it at 190 feet per second in the frog.

Venereal Disease.—See SYPHILIS.

Venison (*Fr.* venaison; from *Lat.* venatio, hunting; from *venor*, I hunt).—The flesh of the common stag and fallow deer is well known under the name of venison, and is very digestible, wholesome, and nutritious. The common stag should not be killed till he is above four years old, and the flesh is fattest and best flavoured in the month of August.

Of venison there is a considerable variety: the flesh is much the same in its general properties of being stimulant and alkaliescent, only differing in degree; the species commonly enumerated are three. The roebuck, when young and well fed, affords a nourishing and easily digested food, which agrees with most constitutions; it is in general not so fat as the other kinds, but is delicate, tender, and most agreeable to the taste. This animal is particularly distinguished by the quickness of its sight, a proof of the wildness of its nature, which forms, as it were, the means of its defence, guarding it against surprise.

The fallow deer much resembles the roebuck, and, like it, should be young and fat, though in point of taste it is somewhat superior in flavour. The principal part of it for use is the haunch; it is best in the winter season, and, like all others of this kind, which are rather of a hard, dry nature, in using it should be baked.

The flesh of the stag is of a dry and strong alkaliescent nature from its great exercise; it is best used very young, or, when this is not the case, its flavour and solubility are generally improved by keeping, but its age should never exceed three years. Autumn is the time in which this food is in highest perfection, as the nourishment is then most abundant for the animal; and vulgar prejudice has attributed to it the supposed quality of contributing to prolong life. Like that of other animals, the flesh is improved by castration; the horns afford a nutritive jelly, highly beneficial, when properly prepared, for invalids. The alkaliescent tendency of venison and other wild animals is best corrected by vegetable acids, either vinegar or lemon juice.

Ventilation (*Lat.* ventilatus, fanned with wind; from *ventus*, wind).—The great remedy for impurities of air indoors is, of course, ventilation, and the best method of accomplishing this has been for many years one of the great objects of sanitarians. It is obvious, however, at the outset, that the air of an inhabited room cannot, if we try our best, be kept as pure as the external atmosphere, so that the object of ventilation must be only to reduce the impurities of respiration to such an extent that breathing them into our lungs again will not be manifestly detrimental to health. About $\frac{1}{100}$ of one per cent. of carbonic acid is all that we should allow the air of our dwelling houses to contain, and in order to keep the ratio of the carbonic acid and its associated animal impurities down to this limit, it has been found by experiment that it is necessary to supply three thousand cubic feet of perfectly pure air each hour for every adult man who is vitiating the atmosphere of a room by breathing it. This amount of air would fill a chamber ten feet wide, ten feet high, and thirty feet long; so that if we remember that every man in a crowded theatre, for example, ought to have three such roomfuls furnished to him during an ordinary three hours' performance, we begin to realize what an important consideration is the due ventilation of halls for public assemblages, and why so many sensitive persons, especially ladies, feel oppressed, suffer from violent headache, etc., or even actually faint away towards the close of a lecture or performance before a crowded house. In such cases, too, the gaslight or other sources of illumination (except the electric and oxy-hydrogen light) aid very much in rendering the air impure, since it has been calculated that one gas-burner, consuming three cubic feet of gas, produces about as much carbonic acid as would the breathing apparatus of ten men in the same length of time.

Ventilation, Corbett on.—On the important subject of ventilation, a paper was read at the Domestic Economy Congress of 1878 by Mr. T. Corbett, sani-

tary engineer and architect, of Manchester, and from it the following useful suggestions are extracted :—

“Presuming,” says Mr. Corbett, “that we are convinced of the desirability of ample ventilation, how are we to effect it ?

“One rule that ought never to be neglected is to take every practicable opportunity of thoroughly renewing the air of our rooms whenever they are out of use for a time.

“But an occasional blow through is not enough; our rooms should be constantly ventilated while in use; and here begins the real difficulty in effecting a satisfactory compromise between the demand for abundant fresh air, reasonable warmth, absence of draughts, and moderate cost; in fact, the domestic economy of ventilation.

“Bear in mind that it is practically impossible to send the spent air out of a room unless you admit other air to replace it. People are constantly trying to ventilate their rooms by exits for foul air without inlets for fresh air, declaring that there is always plenty of air in the room, and so forth. They would be rather startled at the result if their plan succeeded, and by extracting without replacing they produced a vacuum.

“Air inlets must always be provided, and these require special care to avoid producing injurious draughts; for while an exit produces only an equable current from all sides towards it, without any distant effect, an inlet tends to blow or jet the air in a direct line from its opening, and therefore it must be so directed as to avoid blowing on to any one.

“In summer ventilation it is sufficient to direct the window or other openings somewhat upward, so that the current may pass overhead.

“With windows pivoted like a looking-glass it will be found that the air passing through the upper opening is chiefly directed upward and inward in the direction of the inclined open window, while the air passing through the lower opening falls almost directly downward. It is, therefore, a good

plan to cover this lower half of the opening with a curtain fastened to a nail at each corner. If the window opening is too high up, the incoming air is often deflected down by the ceiling or by the window head; inlets in the lowest parts of the windows are therefore preferable, if they are but properly arranged to turn the air upward.

“It is a common fault in a large room, with, say, a dozen windows, to have but one or two of them opened widely as inlets, thereby causing strong currents in some parts and leaving other parts of the room too close. The best plan is to use every window through which air will come in, considering the direction of the wind, but let each be open only a little, so as to provide a large number of small currents of fresh air.

“With common sash windows it is not easy to direct a large stream of air upward, but a moderate supply may be very conveniently admitted by raising the lower sash two or three inches, so as to make an opening directed upwards at the meeting bars, and having the opening at the window-sill closed by a piece of wood fixed to the frame. This arrangement is very convenient for use in ordinary dwelling-rooms.

“Doorways do not form comfortable air inlets, except in very warm weather, as they cause cold draughts along the floors.

“Sherringham’s inlet valves, or similar inlets of woodwork, are the best form for direct inlets from the external air; they can be opened more or less, as required, and they turn the stream of air diagonally upward so as to spread throughout the rooms. A mistake is often made in placing them near the ceiling; the best position is about five feet above the floor, leaving ample space for the incoming stream of air to spread before reaching the ceiling; for where the inlet is placed too high the air rebounds from the ceiling, and becomes a cold down-draught on to the heads of those below.

“Vertical pipes, opening upward at four or five feet above the floor, also form good air inlets, though not so good as diagonal upward inlets.

"In the ventilation of small dwelling-rooms economy of warmth and comfort are great considerations in cold weather; and if, by introducing effective ventilation, we were obliged to reduce warmth and comfort, I fear our advice would be thrown away, but I will endeavour to show how to combine comfort and health by very simple means.

"Bear in mind that we wish to keep our feet warm and our heads reasonably cool, to avoid perceptible draughts, and yet to continually renew the air in every part of the room.

"First, close up any chinks and holes about the floor or below the door, so as to prevent cold draughts about the feet. It is often convenient to nail a slip of wood, or of carpet, across the threshold, for the door to close against; or, if the space below the door is considerable, a hanging flap of leather or carpet may be nailed to the door so as to reach the floor.

"It is a tedious job to caulk the open joints in a badly boarded floor, but sometimes it well repays the trouble. If the room is carpeted, a simpler plan is to lay sheets of coarse brown paper under the carpet.

"Having thus almost stopped the common uncomfortable air inlets of the room, do not fail to provide other means of inlet for pure fresh air. A hole about four inches square may be made in the external wall, about five or six feet above the floor, and a small picture may be hung in front of it, leaning forward so as to direct the air up towards the ceiling, the triangular spaces at each side of the picture being filled with wood or cardboard to prevent the air turn-sideways down the wall.

"If the house has a passage it is best to make the room air supply from the passage, so as to have the room air slightly warmed before entering the room, of course taking care to supply the passage from the external air.

"A good form of air inlet can be made, where the doorway has mouldings round it, by cutting away the backs of the architraves over the door, and making a hole across the

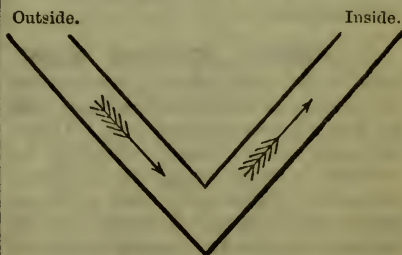
lintel, so as to admit the air and turn it up from behind the mouldings.

"Another very effective air inlet, by means of a sash window, I have already described—that of slightly raising the lower sash so as to make an upward opening between the meeting bars at the mid height of the window, closing the opening below the window by a slip of wood, or by one of those sash bags that are usually neither use nor ornament."

Ventilation during Pregnancy.

—Too much care cannot be taken to see that the bedroom occupied by the pregnant female is properly ventilated. If this is disregarded the sleep obtained will be unrefreshing, and the influence upon the body will be of a most unhealthy kind. The windows should be thrown open as soon as the sleeping apartment is left in the morning, and the mattress and blankets should be thoroughly exposed to the air. Frequently, on going into a badly ventilated bedroom from the outer air, one is conscious of a close, stuffy smell, far from agreeable and anything but healthy; and yet those who occupy the room are unconscious of it, and we, if we remain sufficiently long in it, have our sense of smell so blunted that we fail to perceive the objectionable odour that arrested our attention at first.

Ventilation, Effective Means of.—A simple and effective apparatus for ventilation consists of a channel near the



ceiling made to pass through the wall as here indicated. The inside opening may

have a lid controlled by a cord and pulley, by which the admission of air can be regulated. The ventilating apparatus should be graduated in size and number according to the requirements of the building. Ventilation by double windows is strongly recommended for large hospitals. By this plan a free supply of air is obtained from without, by its passage through a large opening in the upper division of the outer window and a metal rose in a pane of the inner one. Draught is in this way avoided; and, moreover, the chill of the fresh air is diminished by passing through the space between the two windows and the metal rose of the inner one, the temperature of which will correspond nearly with that of the interior of the apartment. In summer no better ventilation is required than can be furnished by freely opening the doors and windows. The registers of furnaces and stoves should not be kept closed, and fireplaces and chimneys, after a thorough cleansing, must be left free to give circulation to the air, without any obstruction from bags of shavings, fancy paper aprons, fireboards, and metal fixtures. Fanlights are good ventilators in summer. Iron gates of open structure, or even Venetian blinds, where security from intrusion will permit, are not only, if tastefully made, ornamental, but may be advantageously used, in order to admit air, as occasional substitutes for the solid and impermeable front doors, on the outside of which they may be conveniently placed.

Ventilation, Florence Nightingale on.—The following very sensible observations on ventilation have been made by Miss Florence Nightingale in her interesting and valuable "Notes on Nursing":—

"With a proper supply of windows," says Miss Nightingale, "and a proper supply of fuel in open fireplaces, fresh air is comparatively easy to secure when your patient, or patients, are in bed. Never be afraid of open windows then. People don't catch cold in bed. This is a popular fallacy. With proper bed-clothes and hot bottles, if

necessary, you can always keep a patient warm in bed, and well ventilate him at the same time.

"But a careless nurse, be her rank and education what it may, will stop up every cranny, and keep a hot-house heat when her patient is in bed; and if he is able to get up, leave him comparatively unprotected. The time when people take cold (and there are many ways of taking cold, besides a cold in the nose) is when they first get up after the two-fold exhaustion of dressing and of having had the skin relaxed by many hours, perhaps days, in bed, and thereby rendered more incapable of reaction. Then the same temperature which refreshes the patient in bed may destroy the patient just risen. And common sense will point out that, while purity of air is essential, a temperature must be secured which shall not chill the patient. Otherwise, the best that can be expected will be a feverish reaction.

"To have the air within as pure as the air without, it is not necessary, as often appears to be thought, to make it as cold.

"In the afternoon again, without care, the patient whose vital powers have then risen, often finds the room as close and oppressive as he found it cold in the morning. Yet the nurse will be terrified if a window is opened.

"It is very desirable that the windows in a sick-room should be such as that the patient shall, if he can move about, be able to open and shut them easily himself. In fact, the sick-room is very seldom kept aired if this is not the case—so very few people have any perception of what is a healthy atmosphere for the sick. The sick man often says, 'This room, where I spend twenty-two hours out of the twenty-four, is fresher than the other where I only spend two. Because here I can manage the windows myself.' And it is true.

"In a little book on nursing, published a short time ago, we are told, that 'with proper care it is very seldom that the windows cannot be opened for a few minutes twice in the day, to admit fresh air from

without.' I should think not; nor twice in the hour either. Such statements only show how little the subject has been considered."

Ventilation for Gas.—See GAS, VENTILATION FOR.

Ventilation, How Effected.—

In our rooms, and especially in bed-rooms, the fire-place should always be left unclosed, and the flue or damper open for ventilation. The windows should pull down from the top, and a piece of wire gauze should be fixed along the open space at the top; or a pane of glass should be perforated with holes capable of being closed in stormy weather. All rooms, and especially sleeping apartments, should be well aired during the day.

We may ventilate a room easily by raising the lower window-sash, and by placing inside the frame a piece of wood three or four inches high, and an inch in thickness, and reaching from one side of the frame to the other. When the inside sash is brought down to rest on this piece of wood, it is thus raised three or four inches. A current of fresh air moves inwards and upwards to the ceiling between the sashes, and if a piece of wood or glass sloping upwards be attached to the top of the lower sash, the current of air will be sent upwards to the ceiling, whence it will diffuse itself through the room. Draughts will thus be avoided.

Ventilation, Hygienic Conditions of.—It is of extreme importance in relation to health to obtain in as perfect a form as possible the two great hygienic conditions of pure air and good water, and in selecting a house especial care must be exercised against the presence of soil, situation, or construction which will interfere with these factors of health. The best system of ventilation is the natural one; that is to say, by the doors, windows, and grates. All artificial systems of ventilation have hitherto proved failures. The perfection of ventilation is where a room is kept

constantly sweet and fresh by an insensible change of air. The open fire-place is undoubtedly of great service in ventilation, and Englishmen would not willingly see it superseded; yet it occasions great waste of fuel, and has the disadvantage of not keeping up an even temperature. The open grate draws upwards the cold air which has entered the room, and causes it to ascend the chimney; in this way a constant current is kept up. Open grates have this great disadvantage, though, in bed-rooms which are also sick-rooms,—that it is hardly possible with them to keep up an equal temperature for the four and twenty hours. If a good fire is lit, say at bedtime, it warms the room to begin with; but as morning advances, and the temperature outside sinks lower and lower, so, too, the fire sinks, and it goes out just when it is most wanted, that is, in the early morning hours. This is the time which is most trying to those who are subject to chest affections; it is then that coughs become most troublesome. Such stoves as Arnott's are free from this inconvenience, but they necessitate ventilation by artificial means.

Ventilation of Bed-room.—See BEDROOM, VENTILATION OF.

Ventilation of Sick-Room.—It seems almost superfluous to say, See that the sick-room is properly ventilated; and yet nothing requires to be more frequently reiterated, because nothing is more often neglected than this. Do we wonder that disease remains so long with us, that its virulence is so greatly increased, and that death snatches so many victims, where the health-giving influence of pure air is thus ignored? By a proper supply of pure air in health, how much sickness might be avoided; by a sufficient supply in disease, how many deaths averted. And yet we are heedless of all this, and, from day to day, go on inhaling impure air, and coop it up in our sick-rooms till the atmosphere we breathe is laden with the germs of death.

Foul air is really more injurious to the

sick than to the well, for with the latter its effects are somewhat counteracted by the pure air which they will usually get out of doors sometime during the twenty-four hours; but the sick often remain for weeks in the same room, where they drag on a miserable existence, breathing over and over again the air which has been made foul by the breath, exhalations from the skin, from the evacuations of the bladder and bowels, from discharging wounds, and various other sources, until they themselves, as well as the clothing, furniture, and walls, become thoroughly saturated with noxious gases. The attempt is never made to drive out this vile air, and to furnish in its place an atmosphere which is not lacking in the

a mistake. It has been frequently remarked that the mere admission of cold air into a room does not imply its proper ventilation, however large the quantity may be; for the air so admitted may have come from a hall, itself badly ventilated, or from unoccupied rooms, the windows of which are never open.

Many artificial methods of ventilation have been invented and employed, with varying results, but none are so useful, because none are of so universal application, as the system of ventilating by means of the window and the fire. And yet how often do we find these means of ventilation neglected, and the patient breathing an atmosphere prejudicial, in the highest de-



DEODORIZER.

life-giving element—oxygen. Popular ignorance and indifference in regard to ventilation, a subject at once so vital and so simple, is as astonishing as it is profound.

In the case of the sick, where the exhalations of the body are increased, and effluvia from discharged excretions are superadded, the atmosphere of an apartment is soon vitiated, and rendered unfit for the purposes of respiration, and hence the demand for pure air becomes more imperative, and the necessity of complying with that demand even more essential than in health.

Many people are under the impression that, in order to have a sick-room thoroughly ventilated, the patient must be constantly shivering from cold; but this is altogether

gree, to his recovery, from carelessness on the part of the nurse! Earnest attention should be paid by those who have the care of the sick to see that these things are not neglected. On opening the window there is no necessity that the patient should feel cold, and care must be taken that he does not. The bodily temperature must be carefully maintained, and an extra supply of blankets or hot bottles supplied whenever these are necessary.

Sometimes the bed is so placed that whenever the window is opened the patient is exposed to a draught, with all its evil consequences. In order that no risk may be run, the bed should be removed at once, and placed in such a position that all harm

from this cause shall be obviated. Care should also be taken that while the door of the sick-room remains open the window is closed, otherwise the patient may be exposed to a draught.

The condition of the fire ought also to engage attention, as, without due regard to this, the ventilation may be very imperfectly carried on. It must not be permitted to get too low and then be suddenly heaped up with coals, as by so doing the room will be filled with smoke, and the patient subjected to much unnecessary inconvenience in consequence.

What a source of atmospheric contamination is to be found in chamber utensils being allowed to remain in the room! Frequently these are placed under the patient's bed, where they are allowed to remain till the nurse finds it convenient to remove them. This ought never to occur. Whenever a chamber utensil has been used, it should be removed from the sick-room (and should always be so covered), and, before bringing back, it should be properly rinsed. On no account should it be allowed to remain, even for a few minutes, in the room.

Slop-pails should, under no consideration, be admitted into the sick-room. Their employment is only an encouragement to laziness, and much harm to the patient may be the result. Cooking, and everything that would render the air of the sick-room impure, must not, of course, be done there; besides, a patient is much less likely to partake of food that has been cooked in his presence than he is of that which has been prepared out of his sight, and brought to him in as enticing a manner as possible.

A great dread prevails in this country in regard to night air, and many, even in health, prefer to sleep in a close and stuffy atmosphere, and awake in the morning unrefreshed, rather than have the window of their bed-room down a few inches at the top. And when we see such fear existing in health, with regard to night air, can we wonder at the careful manner in which it is excluded from the chamber of the sick? We fancy, when the window is closed, that

we have shut out this supposed deadly enemy, and that we may rest in security; and yet what have we done? Have we, by closing the window, excluded the night air, and, if so, what are we inhaling instead? It requires little reflection to show that, at night, we must breathe night air.

Ventilation of Sick-Room, Useful Hints for.—1. *Swinging Door.*—

It has been suggested that a door swung rapidly and quietly back and forth will pump the bad air out of a room, and draw in the fresh air from the window which is down at the top.

2. *Promoting Circulation of Air.*—With the doctor's leave, the window farthest from the bed can be kept constantly down an inch at the top, the blinds, the shutters, or a screen, being so arranged that there shall be no direct draught on the patient. Stand a lighted lamp in the open fire-place, or, better, light a fire there. This draws the foul air up the chimney, while the fresh air from the window takes its place. If it is impossible to have a fire constantly, a few sticks lighted several times a day, and the lamp kept burning in a chimney at all other times, will answer.

3. *What to Remember about Perfumes.*—Remember that the burning of pastilles or coffee, the sprinkling of perfumes, etc., does not purify the air; it is simply covering, not cleansing. Fresh air can come only from outside the house.

4. *A Disinfectant for Vessels.*—In communicable diseases, and especially in typhoid fever and dysentery, always keep in the vessels, and pour down the closet daily, some of the following mixture:—Water, 2½ gallons; sulphate of iron, 4 pounds; carbolic acid, 4 ounces.

5. *A Deodorizer.*—A pound of sulphate of iron (copperas) dissolved in two quarts of water is an excellent deodorizer, and has no disagreeable smell. Pour a little into the vessels after washing them, and keep it in them. The mixture will stain towels.

Ventilation, Profit of.—Of all the

branches of domestic economy none is more wholly profitable than this which we advocate—the habitual practice of ventilation. Is an economy of our health by avoiding the risks of contagion, consumption, and general enervation consequent on breathing a close, exhausted atmosphere. It increases our powers of mental and physical work; it also increases materially the refreshing and reinvigorating effects of our repose; it adds a constant pleasure to our life, by making use of the sweet fresh air which the winds bring constantly from the green country and the broad ocean in free abundance: we have but to admit it and enjoy all its benefits; ours, then, will be the fault and the consequent penalty, if we wilfully neglect this great means of health, strength, and pleasure.

Ventilation, Results of Experiments in.—The scientific authorities of France have embodied the results of their experiments in regard to ventilation in the following table, which has been adopted by the Government of that country in regulating the construction of public buildings:—

The ventilation for each person and every hour must give in—

	Cubic Metres of Air.
Hospitals with ordinary sick . . .	60 to 70
„ „ wounded . . .	100
„ „ epidemical diseases . . .	150
Prisons	50
Workshops, ordinary . . .	60
„ unhealthful occupation . . .	100
Barracks, during day . . .	30
„ „ night . . .	40 to 50
Theatres	40 to 50
Halls for long meetings . . .	60
„ short „ . . .	30
Schools for children . . .	12 to 15
„ „ adults . . .	25 to 30

Any less supply of pure air than indicated by this statement is deemed insufficient, while, of course, any approximation to a higher standard consistent with other requirements, may be regarded as desirable.

Ventral Hernia. — See HERNIA, VENTRAL.

Ventricle (*Lat. ventralis*, of or pertaining to the belly; from *venter*, the belly). —The name given to various cavities of the body, as of the brain or larynx, but especially to the two muscular sacs or cavities situated at the apex or lower extremity of the heart, one on either side, each being in communication with the auricle above it, and affording by contraction the means of forcing and propelling the blood into and through the arteries. The ventricles are distinguished as *right* and *left*, from their position, one being on the right side and the other on the left side of this organ. The right ventricle



THE HEART, WITH THE RIGHT VENTRICLE OPEN.

opened into, so as to display the sigmoid or semilunar valves, is shown in the above illustration: *a k* being the pulmonary artery.

Vermicelli (*Ital. vermicelli*; from *Lat. vermiculus*, little worm; from *vermis*, worm, in allusion to its appearance).—This is an unfermented or coagulated preparation of flour, much used in Italy, and imported in increasing quantities into this country.

Vernal Ague.—See AGUE.

Vertebræ (*Lat. vertebra*, joint; from *verto*, I turn).—In the accompanying illustration *a-b* represents the cervical vertebræ; *b-c*, the dorsal vertebræ; *c-d*, the lumbar vertebræ; *d-e*, the sacrum; *e-f*, the coccyx.

The vertebræ are firmly bound to each other in such a way as to admit of flexion and extension and a certain degree of rotation, while by their solidity and firm attachment to each other great strength is secured. Some conception of this strength may be formed when we consider the enormous loads which some athletic men are able to carry on their shoulders, or raise in their hands; the whole weight of which is necessarily borne by the vertebræ of the loins. As the space occupied by the abdomen gives large outward dimensions to this region of the body, it is only upon reflection that we perceive that the whole force exerted by the human frame in its most strenuous efforts centres in the bony column.

Vertigo (*Lat. vertigo*, a turning round; from *verto*, I turn).—Vertigo, or giddiness, is that peculiar sensation wherein we seem to be standing quite still, and objects running round us. This commonly causes loss of balance, and the individual may fall down. In a good many cases he is able to recover himself without falling, especially if he can lay hold of anything to steady himself with for a moment. In most cases giddiness depends on an insufficient or improper supply of blood to the brain. Thus, in giddiness, after a severe illness, in attempting to stand upright, we see impure blood supply. In other instances, the blood supply is impure from containing too much alcohol, or the product of imperfect food metamor-

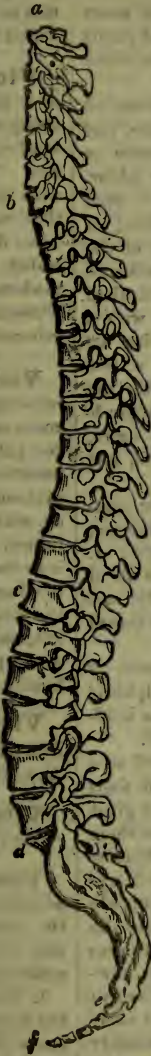
phosis. In old people, when the vessels become hardened and unyielding, we often find giddiness a permanent symptom.

Thus it is seen that vertigo is rather a symptom than a malady, and a symptom, too, of very varying significance; for, sometimes, apparently over-fullness of the vessels gives rise to a kind of giddiness. If, for instance, the face is flushed and the head hot, it may be desirable to give some purgative medicine; whereas, the kind referred to first of all as occurring in convalescence is best remedied by a glass of wine. The subsequent management depends on the same principle. Where there is weakness, good food and exercise are the best remedies; in the other, saline purgatives, with some diuretic.

Not unfrequently vertigo depends on or foreruns brain disease, and such brain disease may be very intractable in character. Headache is commonly associated with such vertigo. Thus, the symptom of giddiness, taken by itself, may teach us nothing beyond directing attention to the case which, if carefully studied, will gradually reveal itself to the skilful practitioner.

Vienna Bread.—See FERMENTED BREAD.

Vinegar (*Fr. vin*, wine; *algre*, sharp, sour).—Vinegar, in small quantities, is a grateful and salutary stimulus to the stomach, correcting the putrescency of animal food and the flatulency of vegetables. It is particularly useful when eaten with animal food of a viscid or glutinous nature, as it promotes its digestion, and it is on this account that it is commonly taken with the meat of young animals. Its use is improper in many valetudinary cases, especi-



THE SPINAL OR VERTEBRAL COLUMN.

ally for gouty persons, and those troubled with red gravel, or costiveness; in green sickness; and for rickety patients and young children. Vinegar is very proper for those troubled with *white gravel*.

Vinegar is often manufactured from oil of vitriol, diluted freely with water, and flavoured with a little genuine cider or wine vinegar, to give it the proper odour. Fraudulent vinegar of this kind, if used for a long time, would be apt to bring on diarrhoea, dysentery, and ulceration of the bowels. It may be detected by the absence or scarcity of the minute vinegar eels when examined microscopically, or even with a magnifying glass, and by its giving an abundant white precipitate when a few drops of solution of barium chloride are added to a suspected sample. Vinegar is frequently adulterated also with water, spirits of nitre, burnt sugar, fusel oil, and acetic acid.

There are four varieties of vinegar commonly used in Europe: 1. Malt vinegar; 2. Wine vinegar; 3. Wood vinegar; 4. Vinegar from starch, sugar, etc. In all of these the acid is identical, but there are marked differences between them in regard to flavour and odour.

In good vinegar there is 5 per cent. of real or glacial acetic acid. More sulphuric acid is occasionally found in it than is allowed by law, namely, 1 part in 1,000.

Vinegar is not only extensively used as a condiment in sauces and salads, but it finds employment in the preparation of a great variety of pickles. Some years ago there was a great outcry raised about the dangers connected with eating pickles, and it was pointed out that most of those commonly sold were positively pernicious, because the vinegar employed in their manufacture was boiled in copper vessels. This danger, however, has to a great extent passed away; manufacturers have become alive to their best interests, and it may be reasonably assumed that pickles sold by respectable tradespeople have been carefully prepared. It is just as well, however, to be on one's guard against all pickles which are brilliant

and beautiful in colour and appearance, as this is a sure sign that the vinegar has been boiled in a metal pan.

Vinegar and Water.—The addition of a small quantity of vinegar to water, though very seldom adopted in this country, is of very old as well as of very extensive use. The Roman soldiers were supplied with vinegar for this purpose as a part of their rations. To make a pleasant beverage a few drops of white wine vinegar should be added to a tumbler of water. This very moderate use of vinegar may with many persons be found rather beneficial than otherwise.

Visitors in Sick-Room.—The admission of too many people into the sick-room is another fruitful source of harm to the patient. Many friends, doubtless well-intentioned, come in, and keep up an incessant conversation, either among themselves or with the patient, and so do him an injury. While they are there, the patient is probably flushed, and they tell him he is looking so much better; but could they see the same patient some time after they had left, and when reaction has occurred, they would probably find reason to change their hastily formed opinion.

Visits, Dangerous, to Sick Persons.—See DANGEROUS VISITS TO SICK PERSONS.

Vital Importance of Fresh Air.—See FRESH AIR, VITAL IMPORTANCE OF.

Vital Power (*Lat. vita, life*).—By accurate observation of its phenomena in the organized world, the following properties and laws of the vital power may be established:—

1. The vital power is the most subtle, the most penetrating, and the most invisible agent of Nature with which we are yet acquainted. In these respects it exceeds light and electricity, to which it seems, however, to have the closest affinity.

2. Though it pervades everything, there

are certain modifications of matter to which it appears to have greater relationship than to others. It unites, therefore, with these in greater abundance as well as in a more intimate manner, and becomes, as it were, peculiar to them. This modification of matter may be defined as organic combination and structure of component parts; and the bodies which possess them we call organized bodies—plants and animals.

This organic structure seems to consist in a certain disposition of the finest particles. That it does not lie in the visible tissue or web may be seen in an egg, in which no traces of organized life can be found, though it is certain that it there exists.

3. It can exist both in a free and a fixed state, and in this it has a great resemblance to fire and electricity. As these may reside in a body without manifesting themselves externally until they are called forth by a suitable stimulus, the vital power in like manner may long reside in a fixed state in an organized body without indicating itself in any other way than by supporting and preserving itself from dissolution.

Of this we have some astonishing instances. A grain of corn can retain life in a fixed state for years, and an egg several months: it neither evaporates nor corrupts, and the stimulus of heat alone can disengage the confined power, and call forth the expansive principle of life.

4. As it seems to have a different affinity to different organised bodies, and abounds more in some and less in others, its union with some is likewise stronger and with others weaker. And it is worthy of remark that where it abounds in the greatest quantity and perfection, it seems there to be more loosely combined. To the imperfect, weak-lived polype, for example, it adheres with much more force than to a more perfect animal in a higher degree of existence.

5. It gives to every body which it pervades an entirely peculiar character, a specific superiority to other parts of the corporeal world. In the first place, it renders them susceptible of impressions as a stimulus, and makes them capable of re-

action; and secondly, it frees them from the general physical and chemical laws of inanimate nature: so that one may with propriety say, by the assistance of the vital power a body is transferred from the mechanical and chemical world to a new one—the organic or living world.

Here the general physical laws of Nature have place only in part, and with certain modifications. All impressions in a living body are modified and counteracted in a manner different from what they are in an inanimate body. In a living body, therefore, no process, merely mechanical or chemical, is possible, and everything assumes the character of life. A stroke, and any stimulus, cold or heat, acts in a living body according to laws altogether peculiar; and every effect thence produced must be considered as compounded of the external compression and the reaction of the vital power.

In this lie the grounds of the peculiarity of different species and even of different individuals. We observe daily that plants which grow near one another in the same soil and which receive the very same nourishment are widely different from each other in their form, sap, and properties. This is the case also in the animal world: every member of that has its own peculiar nature.

6. The vital power is the principal support of that body in which it resides. It not only binds and keeps together the whole organization, but it counteracts also very strongly the destructive influence of the other powers of Nature, so far as they depend on chemical laws, which it is able to annihilate, or at least to modify.

7. A total loss of the vital power is attended with a dissolution of the organized structure of the body which it before filled. The matter of the body obeys the laws and affinities of inanimate Nature, to which it now belongs; its first principles are divided and separated, and corruption under the usual circumstances follows, which can alone convince us that a body has been totally deprived of the vital power.

But it is a great and striking observation that corruption itself, which seems to annihilate all life, must be the means of calling forth new life again, and that it is properly nothing else than a highly important process to disengage in the speediest manner the component parts, no longer susceptible of life under that form, and to make them fit for new organic combination and life. No sooner is a body thus decomposed than its fine particles begin to be animated in a thousand small worms, or to display their revival under the figure of beautiful grass: the most vivid flowers recommence, in this manner, the great circle of organic life; and, by a few changes, become a year after component parts of as perfect a human being as that which they appeared to corrupt. Their apparent death was only a transition to a new life, and the vital power leaves a body only that it may unite itself again with it in a more perfect manner.

8. The vital power may be weakened and even totally destroyed by certain causes; and by others can be excited, strengthened, and nourished. Among those which destroy it may be reckoned in particular cold, the great enemy of all life. A moderate degree of cold, however, can be so far strengthening as it concentrates the vital power and prevents its consumption; but this strengthening is negative; and a higher degree of cold banishes it entirely. In cold no vital expansion can take place, no egg can be hatched, no grain shoot forth.

To these also belong certain arrangements which seem to have effect partly by annihilating the vital power, and partly by a destructive alteration of the internal organized disposition of the particles. Thus a violent electric shock, or lightning, deprives plants and animals of life instantaneously, without leaving the least trace of their having injured the organs; and thus among other more perfect beings, in particular, may the vital power be destroyed in a moment by violent agitations of the mind, such as sudden fear or joy.

Lastly, there are certain physical powers—poisons and infectious diseases—which

are highly capable of weakening and even of annihilating it.

But there are agents also of a contrary nature, which have a friendship for and an affinity to the vital power, and which are capable of exciting, invigorating, and, in great probability, of affording it a subtle nourishment. These, in particular, are light, heat, and air, or rather oxygen—three celestial gifts which may with great propriety be called the friends and guardian spirits of life.

9. There is still a cause which tends to weaken and diminish the vital power, and which lies in itself, namely, the loss it sustains by exerting its strength. By every exertion it loses some of its force; and when these exertions are too violent, or continued without intermission, the consequence is that it may be completely exhausted. This is proved by common experience, not to speak of scientific experiment, as we find that, after great exertion in walking, thinking, etc., we become fatigued. If this irritation be often and strongly repeated, the power will be sooner exhausted; and if slowly, it will be exhausted later; and even when it appears to be totally exhausted, one, by intermitting the irritation for some time, can occasion a new accumulation of it and produce fresh exertions. Hence arises a new means of strengthening—namely, rest, or a suspension of exertion, by which indeed the power can be accumulated and increased.

10. The most immediate functions of the vital power are not only to receive impressions, such as irritation, and to react upon them, but also to change into organized nature the component parts which are added to the body—that is, to create them according to the laws of organization, and also to give them that structure and form which the end of organization requires.

11. The vital power pervades all the parts of an organized living body, whether fluids or solids; but it manifests itself in different ways according to the difference of the organs: in the vessels of the nerves, by sensibility; in those of the muscles, by

irritability, etc. This it does for some time visibly and without interruption, and is what we name generation or growth, until the organized body has attained to its destined degree of perfection. This plastic creative power does not, however, cease to act; but what was before growth becomes now constant renovation; and this incessant regeneration is one of the most important means which support the being.

Vitiated Air.—See AIR IN ILL-VENTILATED PLACES.



INFLUENCE OF VITIATED AIR.

Vitiated Air, Influences of.—

Some instructive experiments on the influences of vitiated air were made by Claude Bernard. He placed a sparrow in a bell-glass, and left it to breathe the same air over and over again. This sparrow he found lived for three hours. At the end of the second hour, however, another sparrow was introduced into the bell-glass, and the newcomer died almost immediately, although the sparrow accustomed to the atmosphere had still an hour to live. Suppose, however, that the first sparrow had been taken from the glass a little before the end of the third hour, it could have been restored to activity, but after recovering sufficient vigour to fly

about, if it were introduced into the vitiated atmosphere it would perish immediately.

Vocal Apparatus, Human.—See HUMAN VOCAL APPARATUS.

Voice (*Fr. voix*; from *Lat. vox, vocis*, voice).—The voice is the sound generated in the larynx at the upper part of the air-

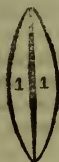


FIG. 1.—DIAGRAM OF THE VOCAL BANDS AS ADJUSTED FOR VOICE PRODUCTION.

passage, by the rapid vibration of the edges of two membranous bands, stretched transversely over the top of the windpipe from before, backward and slightly downward. A delicate elliptic space is left between the two vocal bands (Fig. 1), and the air from the lungs, as it escapes forcibly through this contracted passage, strikes the edges of these bands with a force which sets them vibrating. The sound started in the air-tube by this vibration is the voice.

During ordinary respiration these vocal bands are widely separated behind, so as to present a large trianguloid space between their edges, for the uninterrupted and free passage of the air (see Fig. 2); and they

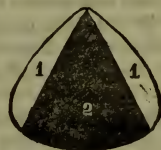


FIG. 2.—DIAGRAM OF VOCAL BANDS SEPARATED BEHIND, AS IN ORDINARY BREATHING.

separate a little more during a deep inspiration, and move slightly towards each other during expiration. In sounding the voice, however, as above stated, the vocal bands are brought together posteriorly to the

middle line, and held there as long as the sound is being made (Fig. 1); separating again when a deep inspiration is to be made (Fig. 2), the process being repeated as vocalization is continued. It is thus that the ordinary expiratory current of breathing is utilized in the normal production of the voice. A vocal sound can be produced by the inspiratory current likewise, if a special effort is made to do so, as is sometimes practised by ventriloquists; but the sound is rough and disagreeable, and the effort soon becomes tiresome and difficult.

In Fig. 1 are shown at 1, 1 the vocal bands.

In Fig. 2, 1, 1 represent the vocal bands; 2, the free space for the breath.

Voice and Character, Connection Between.—See CHARACTER AND VOICE, CONNECTION BETWEEN.

Voice, Varieties of.—See VARIETIES OF VOICE.

Volition during Sleep (*Low Lat. volitio*, act of willing; from *Lat. volo*, I wish or will).—That volition is not suspended during sleep is proved by many facts; and probably the experience of every person who remembers his dreams affords evidence that the will is as busy during sleep as when awake. But the fact is strikingly illustrated by examples of remarkable exertion of will in the employment of intellect and genius during sleep. Tartini, a celebrated violin player, composed his famous "*Sonata del Diavolo*" while he dreamed that the devil challenged him to a trial of skill on his own violin. Franklin informed Cabanis that he often during his dreams saw clearly into the bearing of political events which baffled him when awake; and Cardan affirmed that he owed many geometrical demonstrations to the reasonings of his soul during sleep. Condorcet frequently left his deep and complicated calculations unfinished when obliged to retire to rest, and found their results unfolded in his dreams. Coleridge's account of his wild composition "*Kubla Khan*" is

very curious. He had been reading Purchas's "*Pilgrimage*," and fell asleep at the moment he was reading this sentence: "Here the Khan Kubla commanded a palace to be built, and a stately garden thereunto." He continued in profound sleep about three hours, during which he had a vivid confidence that he composed from two to three hundred lines, if, as he says, that can be called composition in which all the images rose up before him as *things* with a parallel production of correspondent expressions. On waking he appeared to have a distinct recollection of the whole, and proceeded to write down the wonderful lines that are preserved, when he was interrupted, and could never afterwards recall the rest.

Vomiting (*Lat. vomitus*, thrown up; from *vomo*, I throw up).—Vomiting means the ejection of the contents of the stomach upwards instead of into the bowel. The act is a complex one, and seems due to two factors, viz., contraction of the walls of the stomach itself, and contraction of the abdominal walls, the contents of the abdomen thereby in their turn pressing on the stomach itself. The causes of vomiting are very various—irritation of the stomach itself, whatever be its cause, will give rise to ejection of its contents; but vomiting occurs in many other maladies. When gall-stones or small urinary calculi are passing there is usually sickness and vomiting; in Bright's disease there is vomiting too, and in the maladies of the brain among children vomiting is an invariable symptom. Vomiting is a very distressing affection, and when it proves obstinate or severe, calls for the immediate assistance of art in order to its being removed.

To arrest vomiting, ice is a capital remedy; prussic acid, too, in very small doses of two or three drops, is a favourite remedy with some. Bismuth is good, especially with small doses of opium. In all cases the quantity of the remedy used should be small. Bulky preparations will most probably be rejected.

Vomiting, Excessive, in Pregnancy.—*Excessive Vomiting.*—Mention has been made when speaking of the signs of pregnancy of nausea or sickness being an ordinary symptom by which, along with others, the presence of pregnancy might be determined. Occasionally, however, instead of the morning sickness, as ordinarily understood, the pregnant female is the subject of excessive vomiting which, if allowed to go on unchecked, may seriously impair her general health, and give rise to symptoms of impending miscarriage.

How to Relieve it.—Morning sickness may frequently be greatly relieved by the patient taking a cup of coffee the first thing when she awakes in the morning and before she leaves bed. Instead of this a cup of milk, with some soda water added, may be given, and frequently proves very beneficial. A walk before breakfast is also to be recommended as useful for this purpose. Usually the condition calls for little active interference beyond the simple means that have just been recommended. It generally passes off, in those cases where nothing has been done, about the period of quickening, and leaving the patient as it does, about mid-day or earlier, permits of her obtaining sufficient nourishment throughout the remainder of the day not to cause any appreciable effect to be produced upon her system in consequence.

The cases which demand prompt attention are those in which the nausea and vomiting instead of passing off about noon persist throughout the whole day. When this occurs, unless it is attended to, a serious state of inanition will be developed from want of nourishment, and unless means are employed to relieve the sickness, the health of the female will become greatly impaired. If the sickness in the morning be great, generally fluid tinged with bile is vomited; while if it occur later on, more solid matter from the food that has been taken is brought up.

If the vomiting continue, the countenance becomes pale and haggard and the breath offensive, and feverish symptoms manifest

themselves, which, unless relieved, may pass on to a fatal termination. In the simpler cases of vomiting no medicinal treatment is required; it will pass away in due time, leaving the digestive powers unimpaired. Should the vomiting, however, be more severe, and should bile be present in the vomited matters, indicating a deranged state of the digestive system in addition to the irritability of the stomach, the employment of soda and bismuth may be had recourse to, ten to fifteen grains of each being taken three times a day, or the confection of senna mentioned above in doses of a teaspoonful. Should there be much pain over the stomach, the application of a few leeches, and after their removal of strips of cloth dipped in laudanum, will generally give great relief.

Waist Belt, Tight (*Welsh*, *gwasg*, waist; from *gwasgw*, to squeeze or press).—The tight waist-belt is highly objectionable. "The tight waist-belt is, I think," says Dr. Richardson, "worse than the tight corset, except when the corset is so adapted that it acts at one and the same time as belt and compressor in general." The illustrations on the next page, which show how the tight or compressed waist is obtained at the cost of the displacement of many of the internal organs, are taken from Mrs. Haweis' clever little book on the "Art of Beauty." Fig. 1 shows the natural waist and the proper position of the vital organs when the natural form is preserved, and Fig. 2 the depression of the liver and stomach, owing to the forced contraction of the waist at the midriff.

Waking up in Night.—If a person chances to wake up in the night for two or three times about the same hour, and cannot fall to sleep again very readily, it rapidly becomes a habit, with the result that if an hour or more is lost in this way, it is made up by that much longer sleep in the morning, or the system is deprived of its healthful amount, and injury will certainly result. The remedy is to retire to bed two or three hours later, for two or three nights in suc-

cession, and yet be waked up at the desired time for rising. Meanwhile avoid sleeping in the daytime. In this way the time for waking up during the night will be bridged over, and the evil habit will be promptly broken up.

Walking (A.-S. *wealcan*, to turn or roll). — There is no exercise so natural to us, or in every respect so conducive to health, as walking. It is the most perfect in which the human body can be employed, for by it every limb is put in

hours kept in modern times. When supper, however, was very early, those who resided in the country might have the advantage of walking two or three miles previous to their going to bed. It is said that such a walk brought on a gentle breathing sweat, which was favourable to repose; and that next morning they awoke with a clear head, and found refreshment from their sleep, of which the indolent have no idea.

An objection to walking is that it brings into play chiefly the lower limbs and the muscles of the loins, and affords little scope

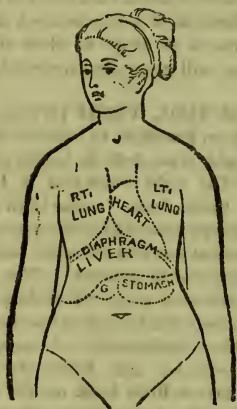


FIG. 1.—NATURAL WAIST.

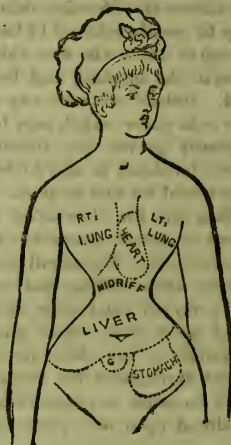


FIG. 2.—ARTIFICIAL WAIST.

motion, and the circulation of the blood is effectually carried on throughout the minutest veins and arteries of the system. Both the body and the mind are enlivened by walking; and, even when carried to an extreme, it has often been found highly serviceable in nervous diseases. This salutary and most excellent exercise is in the power of all persons having the use of their limbs, and can be adapted, in degree and duration, to the various circumstances and wishes of each individual.

It was an old rule, "after dinner to sit a while, and after supper to walk a mile"; but that adage is not consistent with the

for the play of the arms and muscles of the chest, and so is insufficient of itself to constitute adequate exercise. Hence arises the advantage of combining with it movements performed by the upper half of the body, as in rowing a boat, fencing, shuttlecock, lawn tennis, and many other useful sports. Such exercises have the additional advantage of animating the mind, and, by increasing the nervous stimulus, making exertion easy, pleasant, and invigorating. Nature, indeed, has shown her intention that the upper part of the body should always partake in the exercise of the lower, by rendering it impossible for us even to walk gracefully

without the arms keeping time, as it were, with the movements of the legs.

Pedestrian excursions, in pursuit of mineralogical or botanical specimens, or in search of scenery, combine in their results all the advantages which well-conducted exercise is capable of yielding. While these walking excursions are proportioned in extent to the constitution and previous habits of the individual, nothing can be more advantageous and delightful. But not a season passes in which health is not sacrificed and life lost by young men imprudently exceeding their natural powers, and undertaking journeys for which they were totally unfit. It is no unusual thing for young men, still weak from rapid growth, and perhaps accustomed to the desk, to set out in high spirits, at the rate of twenty-five or thirty miles a day, on a walking excursion, and as the inevitable consequence of carrying exercise for days in succession to that degree in which *waste exceeds nutrition*, to come home so much worn out and debilitated that they never recover.

Walking, Act of.—Speaking of this, Professor W. Turner says:—"The act of walking consists in the movement forward of the trunk by the alternate advancement of the lower limbs. Suppose a person to be standing erect, with one leg a little in advance of the other; the body being inclined suddenly forward, is pushed in advance by the extension of the hindmost limb so that the weight falls more and more upon the advanced leg, which at the same time is shortened by bending the knee and ankle. The heel of the hindmost limb being then raised by the action of the muscles of the calf, the toes press against the ground so as to push the trunk so far in front of the advanced limb as to be no longer safely supported by it; the hindmost limb is then raised from the ground by muscular action and allowed to swing forward by its own weight, but guided by the muscles, until the toes touch the ground in front of the opposite limb. A step has now been made, and the limbs are in a corresponding but opposite

position from that in which they were when the step commenced; a repetition of the act constitutes another step, and so the alternate action continues. At one moment in each step both feet touch the ground at the same time, *i.e.*, when the hind foot presses against the earth.

Walking, Best time for.—The part of the day selected for walking exercise should be that when the temperature is most agreeable; for example, midday in winter, or the morning and evening in the summer season. In the morning of winter the atmosphere is too cold for any but the soundest lungs; and if the weather be not frosty, there is more or less moisture in the air, which is insalubrious. The evening is much more objectionable for the same reasons. In large cities another objection attaches to the morning and evening, namely, the quantity of smoke retained near the earth by the cold air, which becomes dissipated by the middle of the day. In the summer season the middle of the day is objectionable from its great heat, and the night air from the fogs and mists which collect near the earth's surface.

Walking, First Lessons in.—Many children are given lessons in walking by people taking hold of one or both hands. This will, however, be better attained by putting the hands round the child's waist, and in this manner giving it support when it is necessary; for the great lesson that the child has at this time to learn is how to maintain its equilibrium, and so soon as this difficult task has been accomplished, the little one will walk without difficulty, the muscles strengthening by usage, and the legs, which were at first bent and not very well adapted to walking, will gradually strengthen, and as they do so, less and less difficulty will be experienced. After a moderate amount of practice, if the child has been left to himself and not frightened by those round about him, he will be able to run about with ease. When he begins to walk about, he should be provided with little

boots, so made that the rapidly growing foot shall not be stinted of room and suffer in its growth.

The movement it inevitably undergoes in the course of its management, and the tossing it is subjected to in the arms of a handy and lively mother or nurse, is the best exercise for the infant. No artificial contrivances, like baby-jumpers or other labour-saving machines, are safe substitutes for the gentle handling of a woman, whose nice tact enables her to adapt her every movement to the requirements of the child. The quick sympathy of the two binds them, as it were, into a common life, and each feeling of the one responds almost unconsciously to the touch of the other. Thus the action of a healthy babe and vigorous mother, animated by a mutual instinct of delighted companionship, will express itself in just such lively movements as are best for infant exercise.

As soon as the child is strong and enterprising enough to leave its nurse's arms and try its own unaided powers of locomotion, it should be allowed to do so, whatever may be the form of its first awkward attempts at progress. Let it roll, tumble, and creep on the floor as it will, only taking care, of course, that it be not exposed to the danger of a blazing fire, a red-hot stove, or precipitous staircase. Fond mothers and ambitious nurses should check their eagerness to set the baby upon its legs. With the power to walk there generally comes the inclination to do so, and the child will ordinarily make the first effort after it has learned to steady itself on its feet, by the aid of a table, chair, or some other support. Mother and nurse, therefore, need not be constantly setting up the unfledged little one, only to topple over again, like an ill-made nine-pin. This premature forcing of a child's walking powers is, apart from the obvious danger of falls, liable to distort the legs and cause deformity for life. Where there is a natural tendency to such distortion, all machines for straightening the limbs should be avoided, as by compressing the muscles tightly they interfere with their action, the freedom of which is not only essential to the

general vigour, but to the removal of the local deformity.

Walking, Rules for.—"The following rules," says Dr. Graham, "are worthy the attention of those who cultivate this excellent species of exercise. 1. The most proper walk, for health, is in a pure and dry air, and in rather an elevated position, avoiding marshy and damp plains. 2. In summer the walk should be taken morning and evening, but by no means in the middle of the day, unless one is sheltered from the oppressive heat of the sun under the shade of trees; in winter the best time is usually after breakfast or from ten to one. 3. One should not walk always over the same road; little benefit is to be expected unless the mind be amused, which it seldom can be going the same monotonous round. 4. We ought to accustom ourselves to a steady and regular but not a very quick pace: in setting out it should be rather slower than we afterwards make it. 5. An agreeable companion contributes much to cheerfulness; but take care that he be really agreeable. 6. To read during a walk is decidedly wrong, very hurtful to the eyes, and sure to destroy almost all the good effects that can be derived from the exercise."

Walking, Style of.—The posture of the human body in walking, as affecting the health and longevity of mankind, has had great stress laid on it by the late Dr. Hall, of New York. He says, walking with the head downwards, or with a staff or cane, promotes a sloping position, and brings on an appearance of old age prematurely, not only by the effects upon the structure of the spinal column, but by throwing the weight of the body on the chest, thus compressing the lungs and diminishing their capability of receiving an adequate quantity of pure air. The blood is thus gradually purified less and less perfectly, until the whole mass of it becomes imperfect, impure, and diseased: then slight causes carry a man to the grave.

"An absolute preventive of all this," says Dr. Hall, "is an habitual persistent attention to the following rules:—Walk with the toes turned outward. Walk with the chin slightly above the horizontal line, as if looking at the top of a man's hat in front of you, or at the eaves or roof of a house. Walk a good deal with your hands behind you. Sit with the lower part of your spine pressed against the chair-back."

The great thing in walking is the boot. This should not be too heavy, but should be strong, with good thick broad soles and low heels. Walking boots should always be made to lace: what are called spring sides are an abomination. A few nails are a decided improvement.

Walking, Style of—Captain Barclay's

(Captain Barclay was the famous pedestrian who once walked a thousand miles in a thousand hours) was to bend forward the body and to throw its weight on the knees. His step was short, and his feet were raised only a few inches from the ground. Any one trying this plan will find his pace will be quickened, whilst he will walk with more ease to himself, and be better able to endure the fatigue of a long journey than by walking in a posture perfectly erect, which throws too much of the weight of the body on the ankle-joints. Barclay always used thick-soled shoes, and lambs'-wool stockings. It is a good rule to shift the stockings frequently during the performance of a long distance, and it is indispensably requisite to have shoes with thick soles, and so large as to do away with all unnecessary pressure on the feet.

Walnut.—The walnut is a native of Persia, and was introduced into England from France. As a pickle it is much used in the green state; and grated walnuts in Spain are much employed both in tarts and other dishes. On the Continent it is occasionally employed as a substitute for olive oil in cooking; but it is apt, under such circumstances, to become rancid.

Wall Papers, Colours of.—Dr.

Richardson does not agree with the recent statement of a learned psychologist, that the effect of colour on the mind is so definite as to determine or modify actual aberration of mind. This, he observes, is an extreme view, and has been advanced from a too limited number of observations. Nevertheless, there are healthy and unhealthy colours. Two particularly healthy are the two which Nature offers us in her blue sky overhead and green carpet under our feet. The faint grey colour which she gives us in light cloud is a healthy shade for shadow, and the pink and golden figures which she presents by sunbeam and cloud are, as occasional colours, healthy. Beyond these colours, for a room in which many hours of life are passed, all are wrong. Dense reds, deep blacks, staring yellows, blank whites, are painful and fatiguing to the sight. In these matters, scientific and artistic knowledge go hand in hand. The most chaste designs in decoration are those which have for their colouring the simple tints of the great house within which our little dwellings are erected, and which has been built for our model by the Builder whose wisdom, and skill, and knowledge, and perfections are infinite.

Wall Papers, Patterns of.—On the subject of wall-papers a quotation may be made from a lecture delivered by Dr. Richardson, whose views on all sanitary matters are well worthy of attention. "The patterns," he says, "which are put upon wall-papers, though infinitely fanciful, various, and sometimes beautiful, are often actually injurious to the mental, and so indirectly to the physical health. A paper in which the pattern is too frequently repeated, in comparatively small but very pronounced outline, is very bad. There is a common pattern of paper in which something between a leaf and four crosses, or four leaves of laurel cut transversely in half, are brought together by the base. If the paper be gazed at intently by almost any person, it produces in a little time a sense of confusion and giddiness. The images

condensed in the retina begin to move, as it were, sometimes in mass, upwards or downwards, sometimes in circle. Some persons are rarely affected, and easily rid themselves by directing the attention to something else. On others the pattern has a very bad influence. The disturbance passing through the senses imperceptibly affects the circulation and the nervous supply of the digestive system. It keeps up irritation; and giddiness, almost amounting to vertigo, has been attributed to it with every show of reason."

Still worse is the pattern in which the artist puts on the paper a design which, when you stand near it, looks like a flower, but when you stand away looks like something else, and that, perhaps, very disagreeable. In a pale lilac paper, mentioned by Dr. Richardson, a rose was depicted as the pattern in sepia and grey. At a distance the rose was transformed into the face of a hideous old man, multiplied again and again, and exceedingly distressing.

To the middle-aged these mistakes are bad, but they are much worse in the bedrooms of children. Such images, once planted in impressionable children, are never completely eradicated. In after days of illness, depression, or anxiety, they come up into the field of mental vision with singular activity, creating further distress. A gentleman, with whom Dr. Richardson was acquainted professionally, told him that in his childhood there was in his nursery a pattern or picture which under some aspects resembled a woman pitted deeply with small-pox, and yawning. That picture, he said, was rarely out of his mind a day together. It was like the Roman centurion's soldiers seen by De Quincey, who always came when he called them, and who often came unsummoned. In short, this victim of an early painful impression was haunted by it, and Dr. Richardson believes that many of the false or shadowy figures of which men and women in disturbed states of mind catch glimpses, as they think, are no more than shadowy reminiscences of this kind laid by in the recesses of the mind, but

rising again unbidden without reminding the observer of their origin.

Patterns on walls ought to be simple and definite. The old classic decorators were splendid masters. Their figures, never numerous, were so placed on the panel as to convey the idea of motion in a manner most agreeable to the sense of sight.

Wall Papers, Poisonous.—It has been proved by direct analysis that many of the dark-green papers, now so much in vogue, contain large quantities of arsenic, in some cases to the extent of twenty-nine grains to the square foot. This poisonous mineral, being of course rubbed off, little by little, in fine particles, mingles with the air of the room, and, indeed, of the entire house, giving rise to the usual symptoms of arsenical poisoning, which, however, may readily escape reference to their true cause, just as the Devonshire colic was for many years attributed to some unknown influence, until it was discovered to be due to the lead taken up from lead-lined tanks, etc., in which the Devonshire farmers fermented their cider.

The indications of health being disturbed by poisoning from arsenical paper are obstinate headache, sickness at the stomach and diarrhoea, but when the quantity of the poison is small, obscure nervous symptoms may for a time alone be present.

Warm Bath.—For purposes of cleanliness, the baths *par excellence* are those of warm water, this term being applied to the ones in which water of a temperature from 70° to 80° is employed. Liquids of this degree of heat usually give a sensation of warmth when placed in contact with the human skin, and therefore avoid the disadvantages of the shock to our systems produced by a cold bath (that is, below 60°), and the excessive stimulation resulting from a hot bath, i.e., one of 85° and upwards. Soap, or alkali in some form, is necessary to remove the fatty matter poured out by the oil-glands already described, and for most people there is nothing better than

the old-fashioned white Castile. Many persons are apt to remain too long in a warm bath, and care should be taken to avoid this mistake, which has a very debilitating effect if often indulged in.

Warm water is essential in early infancy, but its temperature may be gradually diminished with the growing strength and increasing age of the child. Drying of the body of the very young is a process requiring a good deal of attention, and lest the moisture which is sure to remain, even after the greatest care, should irritate the skin, its most tender parts ought to be dusted with powdered starch or rice flour.

It is very important to avoid being exposed to cool air after immersion in a warm bath, because mechanical obstruction to the outflow of perspiration from the pores being washed away, the amount of fluid poured out from the skin, and consequently the cooling effect of evaporation from the cutaneous surface, is greater, and the danger of becoming chilled much increased. The condition is accurately expressed by the popular saying that a warm bath "opens the pores," although the exact method by which this opening is accomplished is not generally understood. Hence it follows that the best time for bathing, with those who are in robust health, yet are liable to take cold, is in the evening, when they can go to bed at once, and so avoid all exposure for some hours afterwards. Invalids, however, and those who have delicate constitutions, will often find that they can endure the excitement of taking a bath best about eleven o'clock in the forenoon, after digestion of the morning meal is accomplished, and yet before they are tired out with the fatigues of the day.

Warmth and Life.—An admirable illustration of the saying, "Warmth is life, cold is death"—which, by the bye, holds good both as regards the whole body and individual parts, as the fingers and toes—is given by Captain Cook, in his account of an excursion by Dr. Solander and nine others, over the hills of Terra del Fuego.

Dr. Solander explained to his companions, before setting out, the ill effects of intense cold, and especially cautioned them against giving way to the strong desire for sleep, with which they would probably be affected, remarking: "Whoever sits down will sleep, and whoever sleeps will wake no more." Notwithstanding all this, he himself was the first to experience this irresistible inclination to rest and sleep, and, in spite of his knowledge of the consequences, he entreated his companions to allow him to lie down. They, however, being aware, from the information he had given them, of the fate to which he would be subjected, urged him forward; but becoming exhausted themselves, were finally obliged to leave him behind with two black servants, who had also grown drowsy. After a little while, however, they returned to Dr. Solander, who was roused, though with great difficulty, and carried to a fire, which some of the men had succeeded in kindling. Though he had slept but five minutes, Dr. Solander very narrowly escaped death, and for a considerable period afterwards was deprived of the use of his limbs. The two negro men perished.

Warmth for Children.—There is no time of life at which warmth is of more importance than in infancy. In a very young child the circulation is almost altogether confined to the surface, the internal organs being yet in a very weak condition. This being the case, to plunge the child into cold water, from an idea of making it hardy, as is done in some countries, and even in our own by some ignorant people, is the height of cruelty and folly; for the unavoidable consequence is that the blood is thrown in upon the internal organs, and inflammation, bowel-complaints, croup, and convulsions are very likely to ensue. A baby should be kept at a temperature above what is suitable for a grown person; and it should be warmly but not heavily clothed; the room in which it is kept should be maintained at a good but not oppressive heat; and it should never be put into other than tepid water.

Warmth, Material Necessary for.—The heat of the body is maintained by the chemical changes which are constantly going on in it, and which are necessary for its existence and growth. Animal heat is a resultant of all or of many of these various changes and transformations that never cease in the body so long as life remains. If, therefore, material must be supplied, to replace what is lost in substance and in force, it must also be supplied to keep up the warmth that is generated by the active metamorphosis of tissues.

Without sustenance the body becomes cold, and the greater the amount of cold that the body suffers, the greater the amount of sustenance that it requires.

Heat is regarded as an equivalent of motive force, and the food that gives off the most heat is the best for giving heat and motive power to the body. The estimates thus found must, at best, be only approximate. They make no allowance for the changes that may take place in the body. Moreover, *cellulose* of vegetable food is indigestible, though it burns readily and evolves much heat. On the other hand, the albuminous elements of food do not give out their entire force in the body. Making allowance as far as possible for these facts, we may arrive at an estimate of the work-power of food that may, perhaps, be approximately accurate.

Thus it has been estimated that the latent force of 700 grains of food—less than $1\frac{1}{2}$ ounces of butter—is sufficient to raise 1,000,000 pounds one foot high in one day.

Practically it is found that only about one-half of the latent force of food is evolved in the body. In all mechanical arrangements—such as the steam-engine—the proportion of wasted force is ten times greater than the force that is utilized.

Warnings of Nature.—Business pursuits which keep the mind more or less upon the stretch for eight or ten hours daily, are generally interrupted by periods of comparative leisure, so that the ill effects of constant mental effort are avoided. But

most communities can point to instances of prominent lawyers, merchants, railway and bank officers, etc., whose devotion to the important affairs under their charge has spurred them on to take home their business cares at night (instead of locking them up in their offices or counting-rooms as regularly and securely as they do their fire-proof safes), and who in consequence must, after a few years of this violation of Nature's inexorable laws, retire into the country, or go abroad for a time, to remedy, *if possible*, a threatened softening of the brain, or attack of paralysis.

Such an individual is sometimes carefully warned by Mother Nature of his approaching misfortune, but as these cautions are by no means always vouchsafed, no man is secure in neglecting the rules just laid down until he thus receives a mild reproof for his transgression.

The "notice to quit" mental overwork is ordinarily served somewhat after this fashion. The business man who is practising the cruelty of overwork upon his patient, long-suffering brain, finds that his day's occupation is becoming a toil rather than a delight, and the last hour grows to be a strain only maintained by a conscious effort of the will. The last row of figures, or the letters at the bottom of the file, seem interminable, and anything out of the usual routine, making demands upon the higher faculties, is shrunk from as an arduous and distasteful task. With this soon appears an exaggerated susceptibility to every trivial annoyance, the result of that irritable condition which always accompanies weakness of nerve-matter. Another warning symptom is the failure of memory, which, beginning with a difficulty in recollecting names, soon extends (if the degeneracy goes on) to a provoking forgetfulness of places and individuals. Occasionally this failure of recollection takes the form of loss of consciousness of a certain event or series of events, which is as complete as though an entire leaf had been torn out of the book of memory. Such an intermittent failure of mental power should always awaken the careless subject of it to

his imminent danger, and lead him at once to reform his habits of intellectual intemperance.

We often witness also an ecstatic state of mind favoured by the condition of the brain. When a peculiar fervour takes the place of orderly activity, and a person's manner is suddenly altered from his natural habit to the assumption of a style of speaking and acting out of keeping with his intelligence and vocation, it will generally be found that some disease of the brain is going on. A man predisposed to insanity is in great danger of losing self-control, by allowing his mind to be ardently, or rather inordinately, engaged on any subject, but, of course, in proportion to his estimate of the importance of the subject will be its influence on his heart, and therefore it happens that some sort of religious impression is so frequently mixed up with the reveries of madness.

Among the physical symptoms of impending exhaustion of brain-power, one of the most important is probably the inability to sleep. Sometimes this morbid vigilance, as it is called, occurs to the extent of lying awake throughout the nocturnal hours; at others, a light, restless slumber, haunted by dreams which reproduce the waking anxieties, and consequently broken and unrefreshing, takes the place of the needful repose. When this condition of affairs has lasted for a month or six weeks, the only hope is generally to be found in a radical change of scene, habits, occupation, and mode of life.

Remember that it will not do to wait for these cautions against over-working the brain, because, in a large proportion of cases, they arrive only after irreparable injury is done, or never come at all. In such instances the sinner against sanitary laws receives his first warning *with* his punishment, in the shape of a stroke of apoplexy or paralysis, an outburst of insanity, or an attack of softening of the brain.

Warts (*A.-S.* weart). — Warts are small growths involving both the exter-

nal, or epidermal, layer and the papillary layer of the corium, or true skin; the hardness is due to great accumulation of the horny epithelial scales; while, if they are torn or cut on a level with the skin, we have bleeding, because the *papilla*, in which are blood-vessels, project up into them.

Little or nothing is known as to the cause of warts; there exists no medical reason to favour the idea of their contagiousness, they being only outgrowths of skin. There is probably no truth at all in the popular opinion that they are caught from toads.

Their removal may be accomplished in several ways: sometimes they all vanish spontaneously, as by magic, in a very short time. They may be burned with nitrate of silver, nitric acid, glacial acetic acid or caustic potash; a more slow removal may be effected with daily touching with dilute acetic acid, or equal parts of dilute muriatic acid and tincture of iron. They may also be taken out mechanically by means of a small steel instrument like a sharp-edged spoon. The writer has seen many disappear after a single one was thus removed. Arsenic internally has also very considerable power over warts. The medical name for a wart is *verruca*: several different varieties are recognised.

"It is a popular belief," says Sir Erasmus Wilson, "that the blood which flows from warts, when wounded, will cause them to grow on whatever part of the skin the blood touches; and schoolboys who love experiments occasionally adopt this method of transplanting them, but without success. Indeed, there is no truth in the supposition; and if a fresh crop should be produced around a wart that has been teased by a schoolboy, the fact, when it happens, admits of a more philosophical explanation."

Water, Absolutely Pure.—See PURE WATER.

Water, Action of, in Food.—The action of water in our food is very important. There would be no carrying of food into the system but for the agency of

water. It dissolves everything that we take, and nothing that we use as food can become nutriment that is not dissolved in water. It will not do to test this by taking things and putting them in water to see whether they dissolve, and rejecting them according to that circumstance; because food undergoes a considerable change in the stomach. It undergoes a change, to begin with, in the mouth. One of the great objects of that change is to render things soluble in water which before had been insoluble. Starch, which we cannot dissolve in water out of the stomach, is dissolved in water whenever it gets into the mouth, for the starch is changed by the saliva into sugar, and that which might have lain unchanged in water for months is so changed by the saliva of the mouth and the gastric juice of the stomach that it is speedily dissolved.

Thus, when we are taking considerable quantities of dry food, it becomes absolutely necessary that we should add a certain quantity of water, so that this dry food should become dissolved. Such things as oats, barley, wheat, rice, maize, and other articles of diet containing little water must have water added, in order that their starch, fat, and gluten may be dissolved and enter into the system. Every pound of perfectly dry food, in fact, should be accompanied by four pounds of water.

Water, Chemical Tests for.—*See* CHEMICAL TESTS FOR WATER.

Water from Mill-Dams.—*See* MILL-DAMS, WATER FROM.

Water, Good, Characteristics of.—*See* GOOD WATER, CHARACTERISTICS OF.

Water, Importance of.—Water is the second great material necessary for human existence, the first being air, the subject we have just considered. It is estimated that man can live without air from two to ten minutes only; without water for three, four, or five days; without sleep for seven days; and without food for ten to fifteen days. But if water is thus an abso-

lute requisite for life, pure water is a no less imperative necessity for health, and since the fluid is especially apt to become contaminated, as a result of its nearly universal solvent powers, it behoves us to watch with exceeding care the sources of our supply. A due supply of water is absolutely necessary for the due performance of the functions of life. A healthy individual requires from three to five pints of water daily, nearly one-third of this quantity being contained in articles of diet, and the rest being supplied to the system in the form of liquids.

Water in Foods.—*See* FOODS, WATER IN.

Water in the Human Body.—Water constitutes about three-fourths of the surface of the earth, and the greater part of the bodies of men and other animals. The quantity of water entering into the composition of the human body is a good deal more than most people think. If we suppose a man to weigh eleven stones, it will usually be found that eight stones of this weight are nothing but water. In other words, a man weighing 154 lbs. contains in his bones, his flesh, his blood, in his brain and his liver, and even in the fatty layers of his body, such a quantity of water that, when counted up into a grand total, it will amount to even 100 lbs.; generally, in a healthy, well-grown man it will be no less than 104 lbs., and may be as much as 112 lbs. A small man, weighing about 100 lbs., will contain about 70 lbs. of water, perhaps rather more.

Water is found everywhere in the body. By its agency all other substances are taken up into the system. All food must contain water; and it is only by being dissolved in the water that the other substances can be used as food. The quantities of water found in 100 lbs. of different kinds of solid food have been given in the table under FOODS, WATER IN, which see.

Water, Lead Poisoning Through.—*See* LEAD POISONING THROUGH WATER.

Water, Putrid, Purification of.

—See PUTRID WATER, PURIFICATION OF.

Water, Requirement of, per Individual.

—If we add together the quantity of water required for drinking purposes and that needed for personal washing, the washing of clothes and houses, etc., we shall find that a reasonable allowance will be at least twelve gallons per day to every person in the community; and if baths are used as they should be, the allowance per day ought to be about twenty-five gallons. "Where water can be readily obtained," remarks Dr. J. A. Russell, "we are not to regard this quantity as too much, having reference to cleanliness and keeping our houses perfectly cleansed; in fact, to fulfil all sanitary requirements. In sickness even more is required, and for trade purposes in large communities a certain proportion still further. In ancient Rome they supplied an enormous quantity—a quantity that puts to shame all our modern notions regarding the supply of water to towns. They had a perfect stream of water carried by aqueducts into the city, three hundred gallons being supplied per head per day."

Water, Storage of.—See STORAGE

OF WATER.

Water Supply.—See WELLS AND

WATER SUPPLY.

Water, Turbid, Purification of.

—See TURBID WATER, PURIFICATION OF.

Water Blisters.—See HERPES.**Water Closets.**—These are inventions

of which no one has any particular reason to be proud. With a show of cleanliness they combine essential nastiness and a good deal of real danger. In large towns their use can hardly be dispensed with; in the country, with imperfect drainage and water supply, they are an intolerable nuisance. Earth should always be used instead of water in country places; it is preferable in every way. To keep water-closets moder-

ately safe, the first thing is ventilation of the sewers; if not, they ventilate themselves into the house by means of the water-closets. A pipe should therefore lead from the house sewer to the highest point of the building. From time to time the pipes and traps ought to be examined, to see that the former are entire and not leaking, and that the traps are in working order. A portion of disinfectant, fluid or solid, should be used at least once every day. The best is carbolic acid, in powder or in solution. With these precautions the water-closet system may be worked with no very great risk; but the best thing is to get rid of it wherever possible.

Water-Cresses.—For popularity as well as for wholesomeness this takes the lead amongst salad plants. "It is generally assumed," says Professor Church, "to owe its pungent taste and medicinal value to the presence of an essential oil, containing, like that of mustard, a considerable quantity of sulphur. But it has been shown that the chief constituent of the essential oil of water-cresses, though rich in nitrogen, contains no sulphur; there is, however, much sulphur, in one form or another, in the plant. Water-cress is also remarkable for the quantity of mineral matter which is found in it. The younger shoots of the water-cress should be selected; they have a pleasant acidulous yet warm taste. Great care should be taken that they are perfectly clean and free from adhering animal matters."

Water Dressing.—This is the application to a sore or wound of a piece of lint, soft linen, or charpie, saturated with water, and covered over with oiled silk, or thin india-rubber cloth, to prevent evaporation or the escape of moisture into the surrounding bed-clothes.

The lint should be double, and of a size according to the surface to be covered. The waterproof material should be cut a little larger than the lint. Care should be taken that none of the lint projects from under the edge of the covering, for if such be the case the water will escape into the

bandage and the clothes, leaving the lint dry and sticking to the wound. Over the whole may be placed a common roller bandage.

Water dressing should be renewed twice in every twenty-four hours, or more often if there be much discharge.

Water-Souchy.—Take two flounders, soles, whittings or haddocks, and boil them in a quart of water to one-third, so that the fish are reduced almost to a pulp. Strain and, removing the fins from four other fish of the same kind, put them into the strained liquid. Add salt and cayenne pepper to taste and a small quantity of chopped parsley. Boil sufficiently long to render the fish eatable, and eat along with the sauce. This is easily digested and much relished by patients during convalescence from fever.

Waterproofing for Boots, etc.

—The following is an old composition for making leather waterproof:—One pint of drying oil, two ounces of yellow wax, two ounces of spirits of turpentine, and half an ounce of Burgundy pitch, should be carefully melted together over a slow fire. If the smell of the turpentine or pitch is unpleasant, add a few drachms of some cheap essential oil, as of lavender, juniper, etc. With this composition new shoes and boots are rubbed, either in the sun, or at some distance from a fire, with a sponge or soft brush. This operation is to be repeated as often as they become dry, until they are fully saturated. In this manner the leather becomes impenetrable by water, and so soft and pliable that it never shrivels nor grows hard or inflexible.

Weakness of Accommodation of Eye.—See ACCOMMODATION, WEAKNESS OF.

Weaning (*A.-S. wennian; Dutch, wennen*, to accustom).—About the ninth or tenth month the mother should begin to wean her child. Frequently this is not attended to,

and many mothers are found suckling their children till they are fifteen or even eighteen months old. This prolonged suckling has its origin in the popular notion that so long as the infant is at the breast pregnancy cannot occur. This notion is, however, devoid of any scientific foundation. There is nothing to prevent the occurrence of pregnancy at this time, and it may not be unfrequently observed that those women who thus unnecessarily prolong the period of suckling are already pregnant, and their milk, deteriorating in quality, becomes unfit for the child, while the long-continued suckling is telling upon their own constitution.

Weight, Height in Relation to.—See HEIGHT IN RELATION TO WEIGHT.

Weight of Brain.—See HUMAN BRAIN, SIZE AND WEIGHT OF.

Weights and Measures.—See MEDICINES, GIVING.

Well, Typhoid Fever from.—See TYPHOID FEVER FROM WELL.

Well Water.—The contamination of well water causes a large proportion of the acute disorders affecting inhabitants of the rural districts.

When rain falls upon the surface of the ground, a portion of the moisture runs off into brooks and rivers, but a much larger part soaks downwards through the earth, and after a few hours or days finds its way, by the minute holes in the soil, into our wells. In the course of its journey towards the centre of the earth it dissolves numerous mineral ingredients, which may render it unpalatable, or even to some degree unwholesome, though seldom actually noxious to health. It is far different, however, with materials which it meets with on its way, derived from the animal kingdom, since these often change our drinking water into slow and insidious poison, or into swift agents of destruction. Two of the most fatal scourges of humanity—cholera and typhoid fever—are particularly apt to be

transmitted from one victim to another by means of contaminated well water.

Many shallow wells derive their supplies from nothing but surface soakage, and the liquid part of the contents of sewers and cesspits—with drain and wash waters and slops. These shallow wells are so easily made in an open, gravelly, or brashy soil resting on clay, and it is so convenient to have a well and pump in the yard, close to the back door, that we forget what danger there is in the plan. Indeed, some people are quite indignant when the plain truth is told them about wells and cesspools. For all that, we cannot urge too strongly the discovery and avoidance of this danger. "Without doubt," says Professor Church, who has written on this subject with great ability, "these shallow wells often receive the soakage from pigstyes and privies, and not infrequently they are in communication with a neighbouring sewer, a leaky drain or a cesspool. In fact, wherever a clay or stiff water-bearing deposit is found, with a loose, open soil and gravel above it, you have a too-convenient place for making a cesspit for the sewage and slops of the house, and a well for the supply of drinking water—no, not of water, but of filtered sewage, from which the grosser parts have been strained off, but which must still retain many noxious matters.

"In a country town in a back lane was a small yard with several cottages. At the end of the yard stood a pump. From this was drawn occasionally a scanty supply of a liquid miscalled water. At last it failed. The explanation was soon found. The owner of the adjoining house had cut off the supply of water from a water-closet, putting an earth-closet in instead. Since that change the water in the yard pump fails except in very wet weather.

"Let it be clearly understood that shallow well waters are hardly ever safe; that we cannot depend upon the purifying effect of the few feet of gravel or sand through which the liquid filters from the cesspool, the cow-byre, the stable, the pigstye, or the graveyard, to the well. To the eye and to

the taste there may be no signs of the disgusting and dangerous pollution; but the pollution may be there nevertheless. Sometimes such waters are taken for years without any known bad results, only a sense of weariness or an occasional sore throat, perhaps; but suppose the cholera comes, or a case of typhoid fever. Then it is, as we have seen in the two cases quoted above, that these waters may spread, and have spread, death around.

"We ought to add here that there are some shallow wells that give fair water. This has been found to be the case where there is a sort of current, or underground river in the subsoil, and where the sources of possible impurity are below, and not above, the soil.

"Recent observations on the propagation and spread of diphtheria tend to show that in all those instances of excessive malignity where whole families of children have been swept away in a few weeks, careful examination will reveal the cause of this unusual mortality in a water supply contaminated by washings or soakings from cesspits or other receptacles for the evacuations of the bowels of more or less diseased human beings.

"Direct experiment has proved that in a light, porous soil, a well of eighty feet deep will drain a mass of soil in the shape of an inverted cone, the apex of which is at the bottom of the well, and the base of which has a diameter of two hundred feet, or more than twice the depth of the well. Hence, if in the centre of a large village building lot, one hundred and fifty feet square, is dug the well for supplying the inhabitants with water, and at any one of its corners, as far distant as possible, is dug a more or less shallow pit to serve as a cesspool, the chance of contaminating the first pit with rain-water washings from the second pit, or cesspool, is very great, and the danger of infecting the whole family with cholera, typhoid fever (and probably some other maladies), should a single case of these diseases find access to the grounds, imminent.

"Of course, the same conclusion holds

good for country farmhouses and dwellings where, from motives of convenience, but a short distance is interposed between the sides of the hole which is called the well and furnishes the drinking water, and the hole which is called a cesspit and is used as a receptacle for filthy, often poisonous, excrement. Moreover, there are, no doubt, many instances where, owing to the inclination of beds of sand or gravel, strata of rock, and so forth, impurities of these and other dangerous varieties may be carried by underground currents much farther than the distances as measured on the surface of the earth which we have mentioned. In other words, a cesspool on a hillside two hundred feet or more away from a well may infect the water of the latter, if underground currents favour the contamination.

"Practically, it is beyond question that in multitudes of instances the cesspools feed the wells, and it is equally certain that such wells feed the graveyards of villages and districts where this culpable neglect of hygienic precautions is allowed to occur. In this connection we cannot too strongly impress upon our readers that filtration through the earth, sufficient to remove visible impurities, does not necessarily render water fit for use—that is to say, *clear* water is not necessarily *pure* water any more than *cold* air is necessarily *pure* air."

Wells and Water Supply.—

Country homesteads run a great danger from contamination of the water supply by soakage of excrementitious matter from cesspits, barn-yards, etc., into cisterns or wells. This mode of production of typhoid fever, diarrhoea, diphtheria, and other fatal maladies has only of late years been understood, and is even yet denied by many intelligent persons, including, we are sorry to say, some medical men who ought to know better. But we think any one who will take the trouble to investigate the condition of the water supply, in a few instances, where several cases of typhoid, for example, have occurred in a single family in the rural districts, will become

promptly convinced that it is only too common and fatal.

In building a house, then (or in selecting a house which is already erected), choose its site so that the well shall be, if possible, at a higher level than the cesspit, and as far from it as can be conveniently arranged, taking care, of course, that in avoiding your own cesspit, you do not dig your well so as to drain the offal from your neighbour's property, and so fall into the very error which you seek to avoid. The house-well should never be sunk within a distance of twice its own depth from any cesspool or other accumulation of filth.

Wells, Tanks, etc., Foul Airs in.—A writer in *The Builder* says: "If there be the least suspicion of the accumulation of foul air, a light should be lowered down first. Where a light will not burn, there a man cannot breathe. But if a man descend and become insensible, and another be induced to follow, he ought at least to be tied with a rope, and so soon as he can fasten one around the fallen man both should be lifted out without a moment's loss of time. Where carbonic acid gas has accumulated, however, it ought first of all to be cleared out; and perhaps the best way to do so is to pump it out, for though invisible, it is like water in this and other respects. When pumping apparatus cannot be had handy, quick-lime in large quantity might be scattered about, so as to absorb the gas. Setting fire to anything to clear it away is worse than useless, for it only adds more carbonic acid gas to what has already accumulated. A not bad plan, where more effectual means are not at hand, has been recommended, namely, tying bulky carpets, etc., into a wisp, and plunging them in and out repeatedly. This may mix good air with the foul, but it will not clear away the foul air as pumping or a sufficiency of lime would do."

Wens (A.-S. wenn, wart).—Wens on the scalp and face are greatly distended sebaceous glands, forming little sacs con-

taining more or less cheesy matter. Sometimes these have an opening from which this may be squeezed. The treatment is by excision.

Wet Feet.—The evil results from wet feet may often be diminished, or entirely averted, by taking off the damp shoes and stockings, rubbing the feet dry, toasting them before a hot fire, or hot blast of air from a stove, and putting on dry, well-warmed stockings and shoes as thick or thicker than those laid aside. To be effectual, however, this programme must be gone through with *at once*, without waiting to become rested enough after fatigue to make the additional exertion easy. Even a delay of five minutes may be sufficient to annul all benefits from such a drying process, and permit the occurrence of congestion of some internal organ which may lead to serious or fatal illness.

Wet Nurse.—For various reasons a mother may find it necessary to obtain the services of a wet nurse. As the choice of a person to fill this position is one of very great importance, and as many of the points which determine her being accepted or refused are not so apparent to the untrained eye, the selection of a wet nurse generally devolves upon the doctor. There are so many particulars which are of importance, but which do not attract the notice of outside persons, that this is the safest course. She should be perfectly healthy and free from the taint of hereditary or other constitutional disease, that the child's constitution may not be contaminated. The mother may be aided, however, in making her selection, by bearing in mind the following points, the substance of which is taken from Dr. Edward H. Parker's "Handbook for Mothers":—

1. The nurse's milk should be of about the same age with the mother's; that is, her child should have been born at about the same time with the one she should nurse. The milk furnished by a woman varies at different times, changing from the

first that is drawn, to the last. A woman with a new breast of milk—that is, who has just been confined—is not fitted to nurse a child who is six months old; neither is a woman with a six months' breast of milk, the best fitted to nurse one just born. This is, however, a consideration of less importance after the infant is six months old. After that time it is safer to choose a woman who has not nursed more than six months.

2. If there are two women, in other respects of equal qualifications, one of whom has a child still living which she has put out to nurse, while the other has lost her infant, without hesitation select the latter.

3. The age of the nurse should not usually be under twenty years, or over twenty-eight, this being about the period at which they are most apt to yield a rich, healthy milk.

4. A woman with brown or black hair should be selected in preference to one with light or red hair; and of the last two, the former should have the preference. The reason is simply this, that light-haired women, although they often have more milk than those who are of a darker complexion, do not furnish in it so much nourishment; their milk is more watery, though it may be more abundant. Red-haired women are apt to be quicker to become angry, and to have tempers not so well regulated as others.

5. The nurse should be of good form and plump, with a white, hard breast, marbled with bluish veins, and a nipple of good size, perfectly free from cracks and eruptions, with gums firm and red, and with good teeth. The general appearance of the face should be that of health.

6. It is scarcely necessary to add that it is desirable to select for a nurse a woman of gentle disposition and of a good degree of intelligence, rather than a stupid or irascible one.

It may be of use to some readers to say that wet nurses very rarely need beer, ale, or other malt liquor, to enable them to perform their duties. These drinks are often necessary to a feeble mother, to

enable her to bear the drain upon her; but a woman who requires them ought not to become a wet nurse. The habit of taking stronger liquors, as brandy, gin or whiskey, is a good and sufficient reason for rejecting a nurse. Their influence on the child is injurious.

What to Eat and Drink, How Found Out.—Obviously there is but one way of answering the above question: that is, by trial of whatever may be found.

In settling the question of the healthfulness of any substance, the taste would be usually a reliable guide, since few natural substances that are grateful to the palate are injurious to the system. But in order to learn the taste of any substance men must first try it, for neither the sense of vision nor the sense of smelling could be depended on. The taste even could not be entirely relied on, for many substances that are more or less disagreeable may yet be valuable as food, and may in time become delightful.

The same difficulties would be encountered in the selection of animal food. Not until they had eaten the animal, or a part of it, cooked or uncooked, could they know what was good and what was evil.

For drink they would naturally experiment, first of all, with the waters of the springs, lakes, and the ocean, and not until after trial would they know the difference between salt water and fresh, or hard water and soft. They would be just as likely to lie down on the beach and lap the waves of the sea, as by the brink of a moss-fringed stream. Their next experiment would likely be with the milk of animals, or of trees, and with the juicy fruits. As with vegetables and drinks, so with fruits; the good would be discerned from the bad only by trial, for neither the eye nor the smell would properly distinguish.

The observations of each individual would be communicated to the other members of the tribe, and then accumulated knowledge would be handed down from generation to generation.

The experience of mankind in the selection and combination of food is, to a certain extent, explained and confirmed by the sciences of organic and physiological chemistry.

If man were forced to depend on his knowledge of the chemical relation of food to the human body, he would starve before he could prepare a single meal, and after the utmost care and skill, in which the most advanced science should be brought into requisition, he could not tell whether the first mouthful might not instantly throw him into fatal convulsions.

But after experience has indicated to us the food that we need, chemistry and physiology come in very appropriately to explain, in a most interesting manner, the laws and principles thus ascertained, and to guide us in their application.

We cook some varieties of fish in oil; others which contain sufficient fat are eaten alone.

In our puddings, eggs, milk, suet, and butter are mingled with rice and crackers, and bread and tapioca.

In our salads are mingled oil and eggs, with lettuce and chicken. Rice is boiled with milk, and cheese is eaten with macaroni, and green corn needs the addition of butter and salt.

Wheat (A.-S. hwæste).—This appears to be the oldest and most valuable grain with which we are acquainted; but we know not the country to which we are indebted for it. "The following analysis may be taken as showing the proportions of the main constituents in a good sample of white English wheat:—

"COMPOSITION OF WHEAT.

	In 100 parts.	In 1 lb.	
		oz.	gr.
Water	14.5	2	140
Albuminoids, chiefly fibrin	11.0	1	332
Starch, with trace of dextrin	69.0	11	17
Fat	1.2	0	84
Cellulose and lignose . .	2.6	0	182
Mineral matter or ash . .	1.7	0	119

"If," says Professor Church, "we assume that all the abuminoid matter present could be so used, not more than $1\frac{3}{4}$ oz. of the dry nitrogenous substance of muscle or flesh could be produced from one pound of wheat grain, such as is represented by the above analysis. The long, hard, translucent wheat, grown in some of the hottest parts of Europe, might furnish twice as much flesh-forming material from an equal weight of grain."

Macaroni, vermicelli, patés d'Italie, and such-like preparations are made from highly nitrogenous wheat.

Wheat is preferred to other cereal grasses for making bread for several reasons. The grain is easily separated from the chaff, which is not the case with barley, oats, rice, etc. Then the yield of fine white flour when wheat is ground in the mill is very large. The flour, also, is made readily into a light and spongy bread. The chemical constituents of the wheat grain are likewise so proportioned as to render this food well fitted for the general sustenance of man, both as regards its flesh-forming and heat and force-producing character.

"The composition of fine flour as obtained from white soft wheat is shown in the following analysis:—

	In 100 parts.	In 1 lb. oz. gr.
Water	13.0	2 35
Fibrin, etc.	10.5	1 297
Starch, etc.	74.3	11 338
Fat	0.8	0 57
Cellulose	0.7	0 49
Mineral matter	0.7	0 49

"One pound of good wheaten flour, when digested and oxidized in the body, might liberate force equal to 2,283 tons raised 1 ft. high. The greatest amount of external work which it could enable a man to perform is 477 tons raised 1 ft. high.

"For one part of flesh-formers in fine wheaten flour there are $7\frac{1}{4}$ parts of heat-givers, reckoned as starch.

"One pound of wheaten flour cannot produce more than about $1\frac{1}{2}$ oz. of the dry nitrogenous substance of muscle or flesh."

M. D

Various kinds of wheat are depicted in the following illustration.



POLISH
WHEAT.

EGYPTIAN
WHEAT.

RED WINTER
WHEAT.

Whey (A.-S. hwoæg; Dutch wey).—

Whey is the watery saccharine part of milk, freed in a great measure from the buty-raceous and caseous matters. It is diluent, and slightly aperient and diuretic; and is given in consumptions, dysenteries, jaundice, etc., alone, or mixed with mineral waters, and sometimes impregnated with the juices of medicinal herbs.

Whey, White Wine.—Take half a pint of new milk and put it into a deep pan. Place this upon the fire and the moment the scum is seen rising to the edge of the pan, pour into it a glass of sherry, or other white wine, and sweeten with a teaspoonful of refined sugar. Allow it again to boil, stirring constantly, and then place it at the side till the curd forms one lump, then strain the whey through a sieve or piece of muslin. It may be taken either cold or tepid, and is an excellent way of administering wine when a moderate degree of stimulation is required.

Whiskey (Celtic uisge, water).—

When genuine, whiskey is obtained by distillation from fermented grain. It has a smoky taste, due to the traces of creasote and from wood or peat smoke. By adding artificial flavours any distilled or silent spirit

may be converted into whiskey. A good sample of Scotch whiskey, two years old, was ten over proof; but it is often sold at ten under proof. The same sample was discovered on analysis to contain 6 gr. of solid matter per pint; 3 gr. of this being sugar.

If whiskey becomes thick, it should be altered through paper-pulp filters. "Too often," remarks Professor Church, "it is performed by chemical preparations, such as the following:—First, a little carbonate of soda in solution is thoroughly mixed with the liquor, and then a corresponding quantity of Epsom salts is added. The precipitate of carbonate of magnesia which then forms carries down with it any floating particles. But salts of several kinds and other impurities are thus introduced into the spirit."

Whiskey in Ague.—See AGUE, WHISKEY IN.

White Blood Globules.—See BLOOD GLOBULES.

White of Eye.—See EYE, SCLEROTIC COAT OR WHITE OF.

Whiting.—The whiting is a fish well adapted for weak stomachs, on account of the little viscidty which it possesses; it is, at the same time, tender, white, and delicate, and conveys sufficient nutriment, with but little stimulus, to the system.

Whooping Cough (A.-S. *hwopau*; Fr. *houper*, to cry aloud).—Whooping cough, as it occurs only once in the same individual, is most commonly a disease of childhood. It may be regarded as an aggravated form of cough. Whooping cough has been known since the middle of the seventh century, and has always of late years been prevalent in this country; it seems to be most fatal in those years in which measles are also prevalent. No disease kills more children under one year of age than whooping cough; nearly 70 per cent. of all the cases occur under two years of age, and not more than 5 per cent. of the

deaths are recorded as above five years of age.

Whooping Cough, Symptoms of.—It usually commences with general febrile symptoms, as headache, listlessness, and heat of skin, but is very early accompanied with cough, which is at first of an ordinary character, and the case resembles one of catarrhal fever. In many cases, however, the febrile symptoms are so mild as not to be noticed, and a slight cough is all that is observed for many days. After a little time, however, the cough assumes its peculiar character, and the whoop, occasioned by a long, protracted inspiration, satisfies any one who has once heard it that the disease is whooping cough, or, as it is sometimes called, kin-cough. In mild cases the paroxysms or fits of coughing occur only once or twice a day, a little phlegm is expectorated each time, the fever is slight or none at all, and after one or two weeks the disease is gone, without any, or with very little disturbance to the constitution. In severer cases the cough is frequent, and each paroxysm most distressing, the little sufferer clinging to something for support, the breathing being interrupted almost to suffocation, the countenance becoming turgid and approaching to lividity, until the expectoration of some viscid phlegm, and usually the disagreement of the contents of the stomach by vomiting, relieves the breathing, restores the circulation, and removes all present apprehension of danger. The recurrence of such violent paroxysms may be only two or three times a day, or as many times every hour, and the attendant fever may be of every degree of severity indicative of more or less inflammation in the lungs, from which, you ought to be apprised, the principal danger in whooping cough arises, rather than from the violence of the fits of coughing. In some seasons there is much more tendency to this inflammation than in others, and then the fatality of the disease is greatest. After the chief severity of the attack is over, the disease becomes chronic, and the peculiar spasmodic cough

may occasionally be heard for many weeks or even months. And there is also a remarkable tendency in subsequent coughs arising from common cold to assume the whooping character for months and sometimes years afterwards.

Whooping Cough, Treatment of.—In all cases it is best for the child to keep in the house as soon as the malady has declared itself; in a very mild case it need not be kept in bed, but it should be in a room of warm and even temperature, and protected from draught; it can then be allowed to play about as it likes. If there is any lung affection, it must be put to bed, and hot linseed poultices placed round the chest. Other children must not be allowed to come near it unless they have had an attack previously, for in this way its spreading may be prevented. The child must be fed in the usual way, but solid food should be given sparingly. When the infant is emaciated and has some other disease, as rickets, etc., the treatment proper for that disease may be continued. Steel wine is very valuable in cases of whooping cough, and more especially when there is no fever, and during convalescence; it may also stop the diarrhoea which is now and then present. If there is any prolapsus of the bowel, the part should be sponged lightly with a solution of sulphate of iron, and at once returned. This is often due to the excessive diarrhoea, and steel wine must be given internally. Numberless remedies have been tried to cure whooping cough, but none have succeeded. Iron, alum, zinc, sulphuric acid, etc., have all failed to do much. The most hopeful remedy is belladonna, if given in large doses and the symptoms watched; children can bear more of this drug the younger they are, but it is a dangerous remedy, and can only be given with the greatest care. Warm clothing must be worn, and during convalescence a nourishing diet, moderate exercise in the air when fine, a tepid bath in the morning, and a tonic, as steel wine or cod liver oil, must be enjoined.

Whooping Cough, Treatment of, by Flogging.—Flogging as a remedy for whooping cough is said to be a favourite style of treatment in Austria. Whooping cough, declare the doctors, being rather a nervous affection than anything else, the flogging is a counter-irritant, and rouses the child to an exercise of the will which often suppresses a cough.

Whooping Cough, Liniment for.—See EMBROCATIONS.

Whooping Cough, Mixture for.—See MIXTURES.

Whooping Cough, Remedies for.—Many cases of whooping cough have been successfully treated by the following syrups:—

Take the strongest West	
Indian rum	1 pint.
Anise oil	2 ounces.
Honey	1 pint.
Lemon-juice	4 ounces.

Mix. Dose for children, one teaspoonful with as much sugar and water, three or four times a day: for adults, one table-spoonful.

Some physicians prescribe nitric acid, chloral and bromide of ammonium, one grain for each year of the child's age; and these remedies and judicious diet will greatly relieve the distressing spasms. If restless at night, give the child a warm bath.

To relieve soreness in the chest, rub it with the following mixture:—

Half an ounce of oil of amber; half an ounce of oil of cloves; one ounce of olive oil; and two teaspoonfuls of laudanum. The diet to consist principally of barley water and whey.

A medical authority says whooping cough may be simply and quickly cured, "if the child take, morning, noon, and night, a dose of *finely ground alum* mixed in a small quantity of powdered sugar for three or four days. The dose varies from one to two grains, according to the age of the

child, and goes on gradually increasing. If necessary, after the fourth day a child eight years old must take seven grains of ground alum three times a day. Milk diet must be abstained from, and all draughts of *cold air* carefully avoided."

When whooping cough is not cured within a month, try a change of air, even from a pure country air to the air of a smoky, gas-laden town. Some persons assert that the *best* remedy for an *obstinate* case of whooping cough is for a child to live the great part of every day in *gas-works*. Seabreezes will often as by magic drive away the disease.

The following prescription for whooping cough has been highly recommended :—

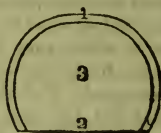
Hydrocyanic acid . . .	6 drops.
Extract of belladonna . .	2 grs.
Paregoric elixir . . .	3 drachms.
Syrup of balsam of tolu .	1 ounce.
Water	3 ounces.

Mix. A teaspoonful three or four times daily.

Windpipe.—Passing through the pharynx, the air next passes through a rigid tube (*larynx and trachea*), the windpipe, open at the top—except at moments of swallowing, and during certain accidents—and always distended by means of stiff plates and rings of gristle (*cartilage*), which surround it more or less completely. Thence the air passes along the subdividing continuations of the air-tube, or windpipe (*primitive, diminutive, and terminative, or ultimate bronchial tubes*), until it reaches the air cells of the lungs, which are grouped in series around each ultimate extremity of this series of air passages. These successive divisions of the air tube are progressively smaller and smaller, the terminal ones being about one-fortieth of an inch in diameter.

The windpipe is a hemispherical, or tunnel-shaped tube, running down the front part of the neck, dipping behind the breast-bone into the chest, where it divides and subdivides into the bronchial tubes. As respiration must be continuous, it is essen-

tial that this tube should be always open: and it is therefore strengthened by a series of hoops of cartilage in its front, or hemispherical portion, while its posterior, or flat portion, is membranous and flexible, so as to yield to the pressure of articles of food or drink which pass down the gullet, or food-pipe, which is just behind it. Most popular accounts of this tube convey an impression that it is circular rather than more or less hemispherical, as here described and figured. 1 represents the cartilage of the windpipe; 2, membranous posterior wall of the windpipe; 3, free space or cavity of the windpipe. The membranous portion is smaller in the female than in the male.



TRANSVERSE SECTION THROUGH MAIN WINDPIPE.

Wine, Origin of Use of.—There is a very curious myth that a lady of the harem of King Jemsheed, of Persia, becoming tired of life, and desiring to commit suicide, stole some of the fermented juice of the grape, which the king had locked away for security. Supposing it to be poisonous, she drank largely of the strange fluid (for up to that time grapes were raised for eating only), became drunk, recovered, and, being delighted with the sensations of intoxication, drank again till all was gone.

Wines.—Wines constitute a fermented drink that includes a still greater variety than malt liquors; and this variety may be arranged into home and foreign wines.

As malt liquor is produced from grains by the process of fermentation, so wine is, for the most part, the production of fruit, by the same means; and the difference between the two lies in this—that the grains, from the strong admixture of saccharine with their other principles, can never allow fermentation to be so complete as for the making of wine; while the fruits,

abounding in a saccharine matter easily detached from their other parts, allow ready and full conversion into the vinous state. Thus wine is the juice of fruit impregnated with a certain portion of alcohol or spirit, and receiving a peculiar modification or flavour from the matters with which it is originally blended.

Wine is seldom presented to us in a perfect and pure state, and even in its best condition it consists of different parts; these are its "must," or sugar, its proper vinous part, or spirit, its acid, and its water.

Wines generally contain more alcohol than beers (*see* BEER), and less than distilled spirits. The quantity of alcohol varies very much in different kinds of wines; and, in fact, the quantity of alcohol is the first element which determines the price of wines. An import duty is levied on all wines coming into this country, and those containing below a certain percentage of alcohol pay less than those above the same point. Wines, however, are not consumed for their alcohol alone. They contain other ingredients which they derive from the grape-juice, which give them taste and flavour. Thus, when the fermentation of the grape-juice is not complete, a certain quantity of sugar is left, and according to the quantity of sugar wines are said to be "sweet" or "dry." Whilst hocks, clarets and other light wines contain little or no sugar, port, sherry and champagne always contain a large amount. In the case of port and sherry this sugar is added during the manufacture, in order to enable them to keep and bear exportation. As before stated, it is added to British wines to cover their acidity.

At the same time that a large quantity of the tartaric acid contained in the juice of the grape is thrown down whilst the "must" is being fermented and the wine is in the cask, the whole of the tartaric acid is not got rid of, and a certain quantity is retained. In order to get rid of this, the wines of Spain are exposed to a process called "plastering," which consists in mixing with the grapes a certain quantity of

gypsum or plaster of Paris. The quantities of alcohol, sugar, and acid found in one imperial pint of certain of the wines commonly consumed will be found in the following table:—

WINE.	Water.	Alcohol.	Sugar.		Tartaric acid.
			oz.	grs.	
Port	16	4	1	2	80
Brown Sherry . .	15½	4½	0	360	90
Pale Sherry . . .	16	4	0	80	170
Claret	18	2	0	0	161
Burgundy	17½	2½	0	0	160
Hock	17¾	2¼	0	0	127
Moselle	18¾	1¾	0	0	140
Champagne	17	3	1	133	90
Madeira	16	4	0	400	100
St. Elie (Greek) .	16	4	0	22	44
Santorin (Gr. red)	16½	3½	0	40	60

This table is principally drawn up from Dr. Bence Jones's Analysis, published in his translation of "Mulder on Wines."

It will be seen from the table that it is erroneous to suppose that ports, sherries, and madeiras are free from acidity. They do not contain so much tartaric acid as the lighter French and German wines, and the taste of the acid is covered by the sugar they contain. The sugar in wine is often a very prejudicial agent. As it exists in most wines, it is in a state in which it more readily ferments than when in the form of common sugar. Hence patients are recommended to take "dry" wines. The fact is, with regard to ports, sherries, and madeiras, they can hardly be said to be wines at all. They are all made on the same principle—that of adding to the genuine wine certain quantities of sugar and brandy. In short, it may be stated that all these wines are manufactured by taking the wine of one brewing and adding to it the "must," or unfermented juice, of a second quantity, and adding the pure brandy distilled from a third portion. It has been a great misfortune that through legislation these wines have been thrust into circulation in our country, and a taste has been acquired for them which it seems now impossible to annihilate.

Wines, Adulteration of.—See ADULTERATION OF WINES.

Wines, Effect of.—Wine has been called "the milk of old age," so "milk is the wine of youth." As Dr. Johnson observed, it is much easier to be abstinent than temperate, and no man should take wine as food till he is past thirty years of age. Happy is he who preserves this best of cordials in reserve, and only takes it to support his mind and heart when distressed by anxiety and fatigue. That which may be a needful stimulus at forty or fifty will inflame the passions with madness at twenty or thirty, and at an earlier age is absolute poison.

Those who drink wine for the purpose for which it was given, as a cordial, to cheer the circulation when it falters from fatigue, age, or profuse evacuations of any kind, "for the stomach's sake," as St. Paul recommends it, and for our "often infirmities," as a medicine, will understand that, of all the ways of saving, to run any risk of buying inferior wines is the most ridiculously unwise economy.

Where wine disagrees, its first effects are generally displayed on the stomach. The breath acquires its smell, the individual is much troubled with acidity and heartburn, and sometimes with nausea; the temper, also, is apt to be more peevish and irascible than usual, and many of the worst symptoms of indigestion soon follow.

Where wine, on the other hand, agrees, the symptoms described seldom occur, or but in a slight degree; the feelings under its influence are accompanied with cheerfulness and vivacity, which often lead to too free an indulgence; and though the constitution does not immediately suffer, as in the former case, yet it becomes very strongly undermined before the age of sixty, and the inheritance of its last years is *gout*, palsy, or an accumulation of diseases.

The effects of wine in producing temporary intoxication depend much on constitution and circumstances. Thus, those possessed of much sensibility and feeling are sooner

intoxicated than the more dull and phlegmatic. Intoxication also sooner takes place in a cold temperature, where the perspiration is checked, than under a warm atmosphere. The same observation may be made with regard to an empty stomach, for the influence of wine is here more powerful than when the stomach is distended with other matter.

Wines, Home Made.—Under this heading are ranked such wines as are produced from the fruits of the northern countries, with a large proportion of sugar, so as to make up for the want of the grape, which the rigour of their climate denies them. These wines have been reckoned by many unwholesome; but this can only be the case when their fermentation is not well conducted, or when they are made use of before they have attained a proper age.

Wines of Commerce.—The wines of commerce may, in a general way, be divided into—(1) dry wines, not obviously sweet, but possessing a more or less distinctive and high flavour—"bouquet"; (2) liqueur or sweet wines, permanently and decidedly sweet and rich in alcohol, with but little aroma, mostly from southern climates. Between these two classes are, of course, all degrees of transition, and a third class may be formed out of those not prominently characterized by either aroma or sweetness. In all these classes we find both white and red or tinted wines.

1. *Wines of France.*—France possesses an especial abundance and variety of red wines (clarets), of which those most highly esteemed are grown in the Bordelais and in Burgundy, as well as in Dauphiné. The Bordeaux wines have a full agreeable bouquet, a good deal of body, are spirited yet not heady, with a pleasant astringency; first-class are Château Lafitte, Château Latour, Château Margaux, Haut Brion. The Burgundy wines are rather heavy, oily, less astringent, with a fine peculiar aroma; such as Chambertin, Clos Vougeot, etc. Second-class clarets are those of St. Julien,

St. Estèphe, Cantenac of the Bordelais, those of the Champagne, the Lyonnais, and Dauphiné. *Petits vins*, or *vin ordinaire*, is produced in all but eight out of eighty-six departments. The white wines of France are more fiery and have more body than the Rhenish wines; first-class are those of Champagne (Sillery), the white Burgundy and Château D'Yquem of the Bordelais, with Sauterne, Barsac, etc., as second-class. Superior dry wines are also produced in the south of France, but most prominent are the *liqueur* wines of Perpignan, Languedoc (Frontignan, Lunel), and the straw wines of Dauphiné and Northern France.

2. *Wines of Germany*.—Foremost among the wines of Germany are the high-flavoured dry Rhenish wines, grown from Alsace down to Coblenz, in the valley of the Rhine and its tributaries. Of the white wines (known in this country under the collective name of "hock," a corruption of Hochheim), those of Hochheim, Rudesheim, Johannisberg, Forst, the Niersteiner, Marcobrunner; and among the red wines the Affenthaler and Asmannshauser are best known. The Moselle wines resemble those of the Rhine in flavour, but are light and acid. The same, to a less degree, is true of the wines of Franconia. The wines of northern Germany are very acid.

3. *Wines of Switzerland*.—Among the wines of Switzerland those of the Jura region (Vaud, Neuchâtel, Geneva) are esteemed best. Almost all have a somewhat harsh and earthy taste, and are not exported. That of the Val Tessin has some reputation as a stomachic and tonic.

4. *Wines of Austria*.—Austria is second to France in the amount of wine produced, but only the wines of Hungary and some of the *liqueur* wines of the Adriatic provinces are somewhat widely known in commerce, and the aggregate export is quite small. The sweet, fiery, and aromatic wine of Tokay, in Hungary, is by some esteemed even above that of Johannisberg, on the Rhine. Many other excellent wines are in high local repute.

5. *Wines of Spain*.—The wine production

of the Spanish peninsula is very extensive and of considerable commercial importance. Among the wines exported, the best known are those of Jerez ("sherry"), Malaga, and Oporto ("port"). The latter is essentially a dry wine, and mixed to suit the English market. The wines of Malaga and Jerez are both of the dry and *liqueur* class, the latter being sweetened with grape-syrup, and all are strengthened by the addition of spirit. Of the same general character are the wines of Madeira, now scarcely found genuine in commerce.

6. *Wines of Australia*.—These are somewhat similar in flavour and appearance to Burgundy. The best of them, probably, is Burgoyne's Tintara, a pleasant, wholesome wine which, from the ferruginous soil on which the vines are grown, is esteemed a good tonic beverage, and is specially recommended for invalids.

Wines, Qualities of.—See QUALITIES OF WINES.

Wines, Unfermented.—Unfermented wine, properly prepared, consists of three-quarters water and one of sugar, but no alcohol; but it should be kept in a cool place in glass bottles, well stopped and placed upside down.

"There are many circumstances," remarks a well-known medical writer, "in which invalids would be greatly benefited by the use of the pure unadulterated wine of the Scriptures, unfermented, and containing no alcohol whatever, thus made:—Pick out the most perfect grapes, press out the juice rapidly, put it into a closed vessel, which place in another vessel of water, raise this to a boiling heat for ten minutes, strain through a woollen bag while hot, put it into bottles, cork and wax, then put them in a cool place, top down, and it will keep pure for a long time if the directions are well followed. Such wine is greatly nourishing to the weak and the sick." It must not be supposed from this, however, that the wines mentioned in Scripture were without alcohol, the product of fermentation, else why the

warning against putting new wine into old bottles or skins of leather, which would yield to and be rent asunder by the action of the wine when in fermentation ?

Winter, Going to Bed in.—*See* GOING TO BED IN WINTER.

Wisdom Teeth.—*See* PERMANENT TEETH.

Women, Intemperance in.—*See* INTEMPERANCE IN WOMEN.

Women, Sleep for.—Women are supposed to require more sleep than men. This is only partly true. Those who have the cares of a family, perhaps the duties of child-bearing and nursing, in addition to the routine of a household, to undergo, may take an hour extra with advantage; but ladies in society and young women employed in indoor labour, frequently require less sleep than men.

Woodcock.—The woodcock is a bird well known, and possesses a delicacy of taste which renders it a great favourite at most tables. Woodcocks are chiefly used in winter, and in their general properties much resemble the partridge, though, in flavour, they are superior.

Worm Powder.—*See* POWDERS.

Worms (A.-S. wurm; Icelandic ormr; Gothic vaurms, worm or serpent—akin to Lat. vermis, worm).—There are several kinds of worms which infest the intestinal canal of man, but the chief are the *ascarides*, or small white thread worms, mostly found in the rectum, or last gut; the *lumbrici*, or long round worms, usually found in the small intestines; and the *tænia*, or tape-worm, which occupies the upper end of the intestinal tube, and is occasionally found in every part of it.

Worms, Causes of.—Worms most frequently appear in those of relaxed habit, especially in those whose digestive organs

are weak; and an excessive use of vegetable food, of fruits, of sugar, or any other saccharine substance, very strongly favours their generation. The reason why children are more infested with them than adults appears to be chiefly because they are allowed to indulge in eating sweet things, to the partial or total neglect of salt.

Worms, Distinction of.—Simple disorders of the stomach and bowels will often produce all the symptoms described below, and in some cases it is difficult to ascertain whether worms do or do not exist in the bowels, when none have ever been discharged. In such circumstances we can determine the real nature of the case only by an attentive consideration of all the symptoms and the patient's habit more particularly with respect to the use of food.

Worms, Symptoms of.—Worms can hardly exist in so sensible and highly organized a part as the intestines without producing some degree of irritation there; and we are certain that irritation cannot take place in that canal without producing, sooner or later, and in a greater or less degree, disagreeable effects in various parts of the system, and especially in the stomach and head. Hence, these animals frequently occasion a variable appetite, which is sometimes deficient, at other times voracious; pains in the stomach, fœtid breath, nausea, headache, vertigo and giddiness, cough, irritation about the nose and anus, disturbed sleep, and a disordered state of the bowels. In children hardness and fulness of the belly frequently occur, with frequent slimy stools, and sometimes convulsive fits. In adults, as well as in children, worms not unfrequently give rise to severe epileptic fits, and sometimes occasion great emaciation.

Worms, General Treatment of.
—The fundamental principle in the treatment of worms is to strengthen the system generally, and the stomach and intestines in particular; and thus not only to dislodge them, but to render them incapable of reproduction. On this principle it will be

found almost invariably that those medicines and plans of treatment are the most eligible which tend to invigorate the whole system, at the same time that they expel the worms. The principal remedies of this kind are salt, preparations of iron sulphur, and camphor, employed in conjunction with a suitable diet and regimen.

A great deal has at different times been said about the efficacy of certain medicines in the cure of worms, which we have not now named; but Dr. Graham believes that there are few cases which will resist the proper use of salt, more especially if the usual means of strengthening a weakly constitution be resorted to, and saccharine substances be avoided as much as possible. Salt is a natural and necessary stimulant to the digestive organs: it excites them to a healthy and vigorous action, and is particularly obnoxious to all kinds of worms. Persons troubled with these animals should be careful to increase their quantity of salt at each meal; to lessen that of every kind of sweet food; to avoid partaking much of vegetables; to regulate the bowels by the occasional employment of a mild pill, and to avail themselves of the usual means of strengthening the general habit, by having recourse to active exercise daily, early rising, the use of the cold or tepid bath, etc. These measures are highly advisable and useful, whatever kind of medicine be employed, and this is a point which I wish the reader to bear in mind. At the same time, a dose of salt and water—for example, an ounce or two of common salt, dissolved in nearly half a pint of water—should be taken in the morning fasting, and repeated at the end of three or four days. This will generally act as a purgative, and will certainly bring away almost every kind of worm. If necessary, the repetition may be extended to the third or fourth time, and, in very severe cases, the quantity of salt used at each dose may be increased to three or four ounces.

This plan is applicable to the cases of children, as well as to those of adults; and, from what I have before said, it will be perceived how necessary it is for them to be

restricted in the use of sweet things, and to be taught to make a free use of salt at almost every meal. As a purging potion for young children, half an ounce of salt dissolved in a quarter of a pint of water will usually be sufficient.

Worms, Diet in Cases of.—The best diet for persons troubled with worms is that recommended for indigestion. "I would remark," says Dr. Graham, "that though I have so high an opinion of the virtue of salt in killing these animals, I would not be understood to advise the use of salted food. Plenty of salt eaten with fresh animal food is good, but salt meat is very objectionable."

Worms, Remedies for.—Preparations of iron are sometimes very useful in expelling worms, and in strengthening the alimentary canal, so as to preclude their reproduction. They are, in general, very appropriate remedies when considerable debility has been induced from the irritation excited by the worms.

Camphor has been highly praised for its virtues in cases of worms by many eminent physicians. Eight or ten grains of this substance may be dissolved, by means of a few drops of rectified spirits of wine, in an ounce and a half of water, taken twice or thrice a day. This may be tried alone, or taken in the intervals between the use of the salt-and-water purgative. It appears to be particularly efficacious in the destruction of the long round worms (*lumbrici*).

In the small white thread-worm, so often infesting the last gut in children, half a pint or a pint of lime-water should be injected once a day, and a dose of castor-oil be given once a week for three or four weeks. Or, instead of the lime-water, a strong decoction of worm-seed, or a solution of salt and water may be injected after the same manner. This plan is generally successful.

The bristly down of the pods of cowhage is also a powerful remedy for worms. A great number of other medicines have been recommended, as tin-filings, male fern,

tansy, tobacco, etc.; and several of them are useful; but we think the preceding remedies are the most powerful and the best, and so very rarely fail of affording satisfactory relief that it does not appear necessary to take notice of any other.

Many patent medicines sold for the cure of worms are composed chiefly of calomel or some other active purgative. They are, no doubt, sometimes beneficial, but the foregoing measures are far more eligible, and those who adopt them will find no need of resorting to any secret preparation.

Worms: Round Worm.—The round worm, in shape, size, and general appearance, is very much like the common earth-worm, but the latter is redder, and not so pointed at its two extremities; the earth-worm also has little projections on its under surface, which probably aid it in locomotion, while they are absent in the parasite. It is found in the small intestines, or that portion of the alimentary canal which is next to the stomach; they may occur singly or several together, and are either vomited up or passed by the bowel; it is more common in children than in adults. A purgative or a dose of rhubarb or aloes will generally suffice to get rid of the worm. When the worm is present, the patient has generally colicky pains in the stomach, foetid breath, with nausea, or vomiting and bad appetite.

Santonin is, perhaps, the medicine most certain to expel this worm; it may be combined with a purgative; it forms the chief ingredient in the so-called "worm powders."

Worms: Tape Worm.—The presence of tape-worms may be known by persons passing small pieces consisting of one or more segments, of a white colour, longer than they are broad, and not unlike pieces of tape. There is generally more or less hunger, unsatisfied appetite, and a feeling of discomfort in the stomach. The worm affects the adult more commonly than children; various remedies have been recommended; but it may generally be easily got

rid of by a dose of a preparation of male fern taken early in the morning, while the individual has been fasting a few hours previously.

It should be remembered that the worm diminishes in breadth near the head, and the neck is, therefore, long and slender; and so when the parasite escapes, this part should be carefully sought for, as then the patient may be sure that the white worm has been expelled, and will trouble him no more. Pieces several feet in length may come away, while the head still remains to form a fresh worm afterwards. The parasite should be burnt when it is expelled.

For tape-worm the oil of turpentine is an effectual remedy. An ounce may be given to an adult, or half an ounce to a child, and may be repeated to the second or third time in the course of a fortnight. It may be swallowed simply suspended in water. It is seldom advisable to repeat it more than three times, unless under the direction of a medical practitioner.

Worms: Tape Worm, Parisian Remedies for.—At the desire of the French *Société Médicale des Hôpitaux*, M. Regnaud has recently procured exact information as to the consumption of *tæni-fuges*, or remedies for tapeworm, in the Parisian hospitals during the ten years 1864-1874. The remedies used in Paris are the flower-tops of koussou, the seeds of gourds, the bark of the root of pomegranate, and the root of male ferns. A very considerable increase of consumption of all these appears from the table; and one may infer that the number of individuals attacked by *tænia* has increased during these years. From personal observations, M. Regnaud was led to think that the quality of certain animal species, consumed in an exceptional manner during the siege of Paris played an important rôle in the unwonted transmission of entozoic parasites. Should this be so, there ought to be a marked difference between the mean annual prescription of *tæni-fuges* during the years preceding 1870 and that during the years

after it. This he finds is the case. Thus the mean annual consumption before and after 1870, respectively, was: of kousso, 3,900 kil.; of gourd seeds, 3,006; 5311; of bark of pomegranate root, 13,008; 14,025; of rhizome of male fern, 5,147; 12,000. The first and fourth, most in repute, have thus more than doubled.

Wounds (*A.-S.* wund, akin to *Lat.* vulnus, wound).—Cuts are the most common injuries in a family, and there should always be the means in readiness for meeting the occurrence. A supply of old linen and long bandages about two inches in width, a few small soft sponges, needles and thread, and a roll of adhesive plaster, should be kept together, and always so accessible as to be at hand on every emergency.

When the bleeding from a cut is very abundant, the first thing to be done is to check it. If the blood is from a vein, as can be seen from its colour, which is dark and purplish, the mere application of cold water, with pressure, will ordinarily staunch it. Should the wound have clean edges, these must be kept together with precision, and so kept by separate stitches, if there is domestic courage enough to perform the operation, or the simpler, though less effective, means of slips of adhesive plaster. When this is done, cover the wound with a bit of soft linen, moistened with cold water, and folded two or three times; and, finally, bind up the whole with frequent turns of bandage, pressing rather upon the injured than the uninjured part. If the cut should be ragged, with loss of skin, it will be useless to attempt to unite its edges, and the best thing to do is to apply bits of folded linen dipped in cold water.

Take this as a general axiom, that recently divided surfaces in living animals, brought into close contact and retained there, will very generally unite, and that speedily; and this whether the corresponding portions or others of the recently divided parts are brought into opposition. The success, therefore, in treating flesh wounds will mainly depend on our being able to bring

the parts more or less into their natural position, and retaining them there till they have united.

Although hæmorrhage, or bleeding, to a great extent, is almost always the concomitant of a wound, still, in simple wounds, where no large vessel is opened, the hæmorrhage is very slight, and is effectually checked by the means used for the proper treatment of the wound. Means and modes of effecting this are shown in the accompanying illustrations, the purport of each of which is indicated in the inscription in reference to it below.

Wounds in fleshy parts may be large and frightfully gaping without any serious or alarming hæmorrhage. In all such, as well as in every flesh wound of less dimensions, first strip the part of its clothing, wash away the blood with cold water, and carefully remove from the wound all extraneous matter, whether introduced by the nature of the accident, or, what is more usual, the ignorant officiousness of the patient or his friends. Sometimes a portion of the clothes, and more frequently a portion of the instrument, or other substance by which the wound was inflicted, as part of the blade of a knife, a piece of glass, a splinter of wood, or, at other times, particles of sand or gravel, may remain in the wound. These should in every case be washed away, or extracted, when it can be done without violence. Blood, dirt, or gravel may be removed by careful washing with a sponge and cold water. Other extraneous bodies which cannot be removed by the fingers, will require a pair of forceps, or pincers, according to the size of the extraneous matter. It will seldom, but may sometimes, happen that you cannot easily effect this, either from the depth or peculiar situation of the wound, or from the extraneous substance having been forced into the bone; in such a case desist rather than use violence, and leave it for the adroitness of a surgeon, or for his consideration, whether to remove it by more forcible means, or by a counter-opening, or whether to leave it for the present buried in the wound.

Having removed all foreign matter, having brought the edges of the wound into close and natural apposition, and having taken effectual means to retain them there, you will have done all that such cases require,

extent and situation of the wound. When situated on the scalp, it will be necessary to cut very close, or, what is still better, to shave off the hair to some distance around the edges of the wound, or the hair will

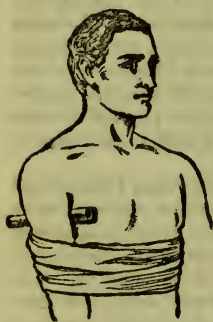


FIG. 1.



FIG. 2.



FIG. 5.



FIG. 6.

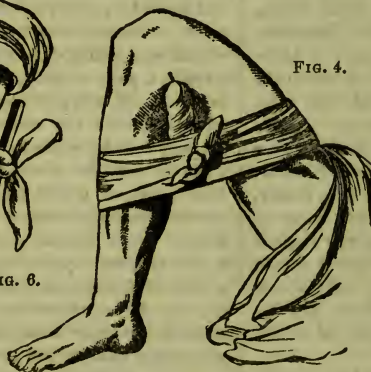


FIG. 4.



FIG. 3.

FIG. 1.—MODE OF ARRESTING BLEEDING FROM BRACHIAL, RADIAL OR ULNAR ARTERY. FIG. 2.—PAD AND BANDAGE APPLIED TO CHECK BLEEDING IN FORE ARM. FIG. 3.—DIGITAL COMPRESSION OF FEMORAL ARTERY. FIG. 4.—COMPRESS AND BANDAGE APPLIED TO CHECK BLEEDING IN LEG OR FOOT. FIG. 5.—COMPRESSION OF CAROTID ARTERY. FIG. 6.—IMPROVED TOURNIQUET.

and all that could be effected by the most experienced surgeon. The means of retaining the divided surfaces in the desired position must vary a little according to the

prevent your plasters from sticking close, If the case be a slight cut on so small a member as a finger, or a toe, a simple narrow bandage of linen may be all that is

required, or, at all events, a narrow slip of adhesive plaster carried round the finger or toe will prove sufficient. If the wound be more severe, the divided edges irregular, or if it be on the surface of a larger limb, or on the head, or on the trunk of the body, adhesive plaster of a width and length adapted to the case will be required, and the proper application of it will call for some judgment, and a good deal of care and nicety. Several narrow slips are preferable to one broad one, and the length should be sufficient to insure its close adhesion to the sound parts beyond the wound. When the wound is considerable, and is situated on the arm or leg, it is advisable to have the slips sufficiently long to go more than round the limb.

Should the parts in the neighbourhood of the wound swell and become painful a day or two after the accident, apply rags wetted in weak goulard lotion, or in simple cold water, freely over the dressings, give the patient a dose of salts, and order a low diet. This will reduce the inflammation, and all will go on well; but do not persist in the cold application after the swelling has subsided and the pain abated, for be it always held in remembrance that some degree of pain and tenderness is absolutely requisite to the healing of every wound.

After having thus described the simple and most approved mode of treating recent wounds of fleshy parts, we need scarcely warn you against the use of spirits, salt water, vinegar, or any of the nostrums of quacks or Lady Bountifuls, with which every one is assailed, as specifics for making wounds heal speedily. No bathing or washing in the first instance can do good but by removing foreign matter; water does this effectually and with the least pain. Salves, cerates, or anything else interposed between cut surfaces, interfere with nature and prevent healing, and other application than adhesive or sticking plaster is worse than useless.

When the wounded part is at the same time much bruised by the accident, it will be advisable to foment with warm water for

an hour or two before using the adhesive plaster, and the slips must be used with some caution, and be drawn less tightly; and it will be well to apply poultices over the dressings, or to cover them with folds of linen soaked in hot water, and to put over these a covering of oiled silk for the purpose of retaining the warmth and moisture.

In a case of a wound connected with fracture of a bone or dislocation of a joint; of a wound in the head, where the patient is senseless or confused; or of a wound that penetrates the cavity of the chest or abdomen, or in which any important organ may be supposed to be injured, send immediately for surgical assistance. In the meantime, remove the patient to his home, lay him on his bed, and strip off his clothing from the injured part, in doing which judicious directions and tender assistance may save the poor sufferer much pain, and by such preparatory steps you will expedite the relief to be obtained when surgical assistance shall arrive.

Whether anything be permanently lodged in the wound or not, the proper applications will be warm fomentations and poultices; and here again we must caution you against nostrums. It is not uncommon to apply the term drawing to certain hot stimulating unguents and plasters; and several such are extolled for their power of bringing whatsoever is lodged in a wound to the surface; but take note that this is always done, and only done, by a natural process of inflammation proceeding to suppuration, or the formation of matter, and the consequent absorption or removal of the interposed parts between the substance and the surface of the skin. This suppuration may be to any extent, according to the size of the body lodged in the wound, and other circumstances, from a small pustule, containing only a single drop of matter, to a large abscess containing pints.

Should an artery be wounded, as will soon be discovered by the profuse and jerking issue and bright red colour of the blood, let a skilful surgeon be sent for at once. In the meantime, don't let the patient die from

loss of blood, but bind a handkerchief firmly on the limb between the wound and the body, and insert a ruler, or stick of any kind under the handkerchief and twist and tighten it until the stream of blood is evidently checked. When the wound is elsewhere than upon the legs or arms, and its bleeding cannot thus be controlled, the best thing to do is to apply cold water or ice to it, and pressure by means of a succession of linen folded in squares and gradually increased from the lowest, which should be of a size sufficiently small to come into close contact with the injured part. This application will form a kind of reserved pyramid, which must be kept in its place by a bandage firmly applied. Repose from action of all kinds must be enjoined upon the patient, who should be kept perfectly quiet, lying down, but not too warmly wrapped up, until the arrival of a surgeon.

Wounds in Eye.—See EYE, WOUNDS IN.

Wrist (A.-S., *wræstan*, to turn).—The joint which connects the hand to the arm, and on which the hand turns. It is formed by the lower extremities of the *ulna* and *radius*, which are, respectively, the large bone and the small bone of the forearm.

Wrist Drop.—See LEAD POISONING.

Writer's Cramp.—This is a painful and very unfortunate affection which sometimes attacks those who write a good deal. The premonition is given sometimes by pain in the muscles employed in holding their pens. There is apt to be a nervous condition of the system, a tendency to anxiety; but this is not always the case. As seen in its typical form, the disease presents no token of its existence until the person affected begins to perform one special act, as, in the present instance, the act of writing. There may be great muscular vigour, and complete control of all the faculties and motions except one, but as soon as the

patient undertakes to grasp the pen and write, he finds his fingers in a state of cramp—they pinch the pen excessively, or they fly back from the pen, making it impossible to hold it. It is very desirable that this should be recognised in an early stage, as it is a malady somewhat difficult of cure, and absolutely disabling as regards clerical work. Some readers may thank us for saying that electricity has been applied of late with good success to the treatment of writer's cramp or palsy.

The affection here described is not confined, however, to writers, but affects also pianists, violinists, engravers, seamstresses, telegraph operators, tailors, type-setters, and many other classes who use one set of muscles almost exclusively.

Wry Neck.—This is a distortion also due to irregular muscular action. It generally comes on gradually in infancy, and consists in a shortened and contracted state of the *sterno-mastoid* muscle, of that side to which the head is inclined and from which the face is turned.



YAM (*Dioscorea alata*).

Yam.—An esculent root found and grown in tropical climates, where it is eaten in much the same way as the potato is eaten in the United Kingdom. The roots of various kinds of yams are used as food.

The Chinese yam is sometimes cultivated in this country, and fairly well liked. It is sweeter in taste than the potato.

Yeast Poultice.—See POULTICES.

Yellow Fever.—Yellow fever has also been known as the Bulam fever, hæmogastric fever, and black vomit. It was first recorded in the West Indies in 1647, and since then it has been more or less prevalent up to the present time. In St. Thomas and St. Domingo the disease seems to be permanently located. It appears to affect those who live in the low country more than those on the hills; it does not spread, as a rule, to parts more than 3,000 feet above the sea. A certain amount of heat is essential to the development of this fever; few cases are observed where the temperature is less than 72° Fahrenheit. Dr. Maclean, who has had much experience of diseases in the tropics, thus lays down the differences between yellow and remittent fevers:—"Yellow fever is specifically different from remittent fever. Yellow fever is unknown in India, where the malarial fevers abound. There is in yellow fever an absence, for the most part, of that periodicity which is so characteristic of true malarial fevers—i.e., the remissions and exacerbations. Malarial fevers exist and are destructive at a temperature at which yellow fever is at once destroyed. Albuminous urine is almost invariable in yellow fever, only occasional in remittent. There is in yellow fever a great deal of bleeding from various parts of the body; in remittent fever this is generally absent. Quinine has a great power over the malarial fevers, but not over yellow fever. Men suffer from malarial fevers again and again; second attacks of yellow fever are very rare."

Yellow Fever, Symptoms of.—

Yellow fever is an infectious continued fever, beginning with languor, chilliness, headache, and pains in the back; the countenance is flushed and the eyes moist and suffused; the skin gradually acquires a

lemon or greenish-yellow colour; there is generally a wandering of the mind, and often delirium; the patient is restless and watchful, or he may pass into a state of drowsiness, and then coma; there is an uneasy feeling at the pit of the stomach, and vomiting; there may also be suppressed hiccough and shrieking or melancholy wailing.

Yellow Fever, Treatment of.—

The patient should have a hot bath in the first stage, and then, going to bed, he should have warm drink to encourage sweating; this may be followed by a purgative, so as to have the bowels well opened. Mercury need not be given, nor is quinine of any use. The sickness is very distressing, but may be relieved by lime-water, or by a few drops of chlorodyne or chloroform; creosote and hydrocyanic acid do not seem to be of any use for this purpose. Stimulants must be given according to the needs of each case. The great objects in treatment are to sustain the vital powers, to moderate the febrile excitement, and to check any distressing symptoms that may arise.

A free exposure to the purest air attainable is of great moment in every case and stage of the present fever, and in the advanced periods is, perhaps, more to be relied on than any other resource. It is, consequently, highly advisable that when a patient is attacked with the disease in a low unhealthy situation, he should, if possible, be directly removed to a higher and more healthy spot, and there have the advantage of as much of the air of the day as can be given. In general, no danger need be apprehended from removing a patient labouring under yellow fever through the open air; on the contrary, such an exposure is very generally more or less beneficial.

Yellow Fever, Treatment of, in America.—

The American journals have referred to three systems for the cure of yellow fever. First, a Mr. Hard, of

Florida, supposes that discharges of artillery in infected places during the night, when the germs are in the air, arrest the fever, and he himself engages to stop it in any town in forty-eight hours! He considers that the sulphurous acid developed by combustion of gunpowder is an important means of purifying the air, and he advises burning about a teaspoonful of powder in all occupied rooms where yellow fever prevails. Next, a captain of a merchant vessel reports that he visited Cuba when it was wasted by the fever, and that his men escaped, though they had no other preservative than a large quantity of guano in the ship. This guano seems to have warded off the disease. Lastly, it is said that Dr. Humboldt, nephew of the eminent naturalist, has, in his practice at Havana, found the poison of the scorpion a remedy against yellow fever. Of 2,478 men of the garrison inoculated with this poison only 676 were attacked, and of this number only 16 died.

Yellow Spot in Eye.—All parts of the retina are not equally sensitive to visual impressions. The most sensitive portion is a small space directly in the line of vision, called the *yellow spot*, from a yellow tinge seen in it after death. Indeed, this is the only portion of the retina that admits of distinct vision, and vision becomes gradually more and more obscure from this point

towards its circumference. When we look at a large object or a landscape, we see only a small portion of it at a time distinctly, and "the image that we receive by the eye is like a picture minutely finished in the centre but only roughly sketched in at the borders." In reading it is necessary to move the eyes backward and forward along the lines of the print, for without this movement we can distinguish not more than one long word. When we look at an object we place the eye in such a position in reference to it that its image falls upon the yellow spot. To obtain an accurate idea of our surroundings the eye must be in continuous though unconscious motion.

This necessity for frequent shifting of the line of vision has much to do with the expression of the face. A person of sprightly temperament and active mind wishes to "take in" all that is going on about him, and moves his eyes quickly from object to object, to bring them all in rapid succession in the range of his yellow spot; while dull or phlegmatic people are satisfied with a general view of things, and do not take the trouble to focus them all in succession sharply on the most sensitive part of the retina.

Young Women, Physical Training of.—See GYMNASTICS FOR GIRLS.



